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**Senior editor:** *Nicolae Păun, Professor Ph.D. Bogdan Vodă University (Vice-Chairman), e-mail: nicolae_paun@ubv.ro; nicolae.paun54@gmai.com*
**Associate Editor:** *Vlad Bărbat, Lecturer, Ph.D. Bogdan Vodă University, e-mail: vlad_barbat@ubv.ro*
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# INTRODUCTION

The proceedings of the international conference THE WORLD WE LIVE IN (May 24-25, 2024) are published – after double peer review and the approval of the scientific committee – in two special issues of the journal, namely this issue (no. 3) and the upcoming issue (no. 4), which the editorial board is currently working on and will be available in Dec/Jan 2024/2025.

We opted for this format over the alternative of publishing a volume due to the increasing national and international visibility of our journal.

The studies included in this third issue of the journal adhere to its interdisciplinary character and are original contributions, whether related to legal culture, economic culture, or physical culture—that is, in a narrower sense, an introspection into the limits and possibilities of humanity from the perspective of what we often call, somewhat prosaically, physical education.

This issue begins with a study from the geopolitical domain, focusing on strategies and military technologies, in a world undergoing profound and visible changes.

Unfortunately, under these geopolitical and military conditions, where peace is becoming increasingly distant not only from the European continent, numerous conflicts fuel technological innovation, which is diverted from prosperity and development towards conflict.

The war in Eastern Europe, Russia's invasion of Ukraine, destabilizes not only the paradigm within which the continent evolves. This war, this great tragedy in Europe and the world, is also a war of Artificial Intelligence, drones, and military technologies that seem to come from the future. However, let us not forget the massive material destruction and, most importantly, the immeasurable human losses.

The study opens and sets the stage for research areas in legal, administrative, and economic fields. All these relevant contributions cannot escape or distance themselves from this "World in which we live," even though the authors aim to propose solutions and debates on development issues.

In essence, the recurring theme of the journal, a word that is increasingly absent from everyday language, simply put, in one word, is: Peace!

**Mohammad JARADAT, Professor Ph.D**
Rector of ,,Bogdan Vodă" University from Cluj-Napoca

***EDITORIAL***

# NATO INTEGRATED AIR AND MISSILE DEFENSE (IAMD) AND THE WAR IN UKRAINE: A MULTILATERAL IMPERATIVE

***Curtis CORDON*** [1]***, Lieutenant Colonel, United States Air Force***

*Executive Officer for the United States Military Delegation to the NATO Military Committee*

**ABSTRACT**
*The war in Ukraine has reshaped modern warfare, particularly in the air domain. The conflict has highlighted the importance of Integrated Air and Missile Defense (IAMD), which connects sensors, weapons, and decision-makers to counter air threats, including drones and missiles. Technological advancements have made drones crucial in gathering intelligence and performing attacks, challenging traditional air defenses. This paper examines IAMD's role in the Ukraine conflict, the rise of drone warfare, and the need for NATO's multilateral approach to bolster IAMD capabilities. A focus on cost-effective technologies, interoperability, and cross-border legislation is critical for NATO to protect its airspace and deter aggression.*

**KEYWORDS:** *Integrated Air and Missile Defense (IAMD), Drone, Warfare, NATO*

**J.E.L. CLASSIFICATION:** H56, O33, F52

## I. INTRODUCTION

The war in Ukraine has introduced dynamic and novel elements to warfighting. While the conflict on the ground has often resembled the trench warfare of the First World War, with static lines and large artillery barrages, the air domain has witnessed vast changes, and it has become increasingly critical to success in the conflict. Technological advancements in the air domain are rapidly reshaping the battlespace, potentially altering the nature of warfare itself. Drones and autonomous systems now provide commanders with unprecedented battlefield intelligence, real-time situational awareness, and targeting data. The miniaturization and proliferation of these new technologies have further amplified their influence on the war.

Failure to harness innovation and keep pace with the changing threat environment could have catastrophic consequences, as it did during the opening days of the Second World War. While Germany innovated and embraced fast-paced mechanized infantry, the Allies remained static and relied on heavily outdated defensive strategies like the Maginot Line. It is of critical importance at this time of great innovation in the air domain for NATO nations to take heed of US Air Force General Brown's motto to "accelerate change or lose" (Chris Gordon, 2023).

Integrated Air and Missile Defense (IAMD) is critical in modern warfare, particularly in the context of the war in Ukraine, where both sides have denied each other air superiority, leading to a relative stalemate on the ground. This paper will focus on the essential elements of IAMD, the rise of drone warfare and related technologies in Ukraine, and the necessity of multilateral solutions to counter authoritarian aggression and protect Allied territory from air attacks.

[1] Corresponding author. E-mail address: curtiscordon@gmail.com

## II. WHAT IS IAMD AND WHY DOES IT MATTER?

IAMD is a comprehensive system of systems that connects sensors, shooters, and decision-makers to defend against a wide array of air threats, including ballistic missiles, cruise missiles, hostile aircraft, glide bombs, and unmanned aerial vehicles or drones. Sensors may come in various types of active radars tuned to specific frequencies, passive sensors looking for electromagnetic emissions, acoustic sensors, or infrared sensors. The shooters in an IAMD system may be various short, medium, and long-range missiles and interceptors, Anti-Aircraft Artillery (AAA), or other, directed energy weapons. To be effective, IAMD must be layered both vertically, covering threats from ground level to the outer edges of the atmosphere, and horizontally, coordinating across terrain, between the different systems, and even beyond borders with Allies. The integration of the shooters with command-and-control systems and decision authority is called shot doctrine, and shot doctrine determines how threats are neutralized, which shooters engage, and when these shooters engage. An effective IAMD requires a high level of interoperability and sensor fusion between the systems that make up a national IAMD, and even between allied nations that share borders.

The war in Ukraine has reinforced the critical importance of a robust IAMD in modern combat. One of the key challenges emerging from this conflict is the increasing complexity and sheer number of air threats. Miniaturization has made it possible for small and inexpensive drones to perform missions that once required large, costly manned aircraft or unmanned systems to perform. These cheaper drones have had a transformative impact on the battlefield, leveling the playing field for smaller nations that may not have vast financial resources, allowing them to deploy effective air assets. At the same time, this technological shift enables well-financed nations, like Ukraine with Western backing, or Russia, to deploy a staggering number of drones—Ukraine reportedly loses around 10,000 drones per month ( Jack Watling and Nick Reynolds, 2024). Despite these losses, the sheer volume of drones provides unprecedented intelligence, surveillance, and reconnaissance (ISR) capabilities for ground commanders. The high number of drones in the air allows forces to find, fix, track, and target the enemy with remarkable speed and precision. This has fundamentally changed tactical combat, as the ability to hide troops and equipment far from the front lines is almost nonexistent (Mark T. Kimmitt, 2024). In this environment, a strong IAMD system is essential to counter these new and evolving air threats, providing a layered defense that can detect and neutralize a variety of aerial platforms, from small drones to larger missiles and aircraft before they strike their intended targets. Without an effective IAMD, the balance of power in the air domain could become severely compromised, and losing in the air is the first step to losing on the ground. This makes IAMD a top priority for NATO Allies and its partners ( Utku Çakırözer, 2024).

IAMD is essential for NATO's future, as any conventional attack on NATO territory will likely begin with air strikes, similar to the early stages of the Ukraine conflict. The NATO Washington Summit declaration emphasized the growing threat posed by the proliferation of ballistic missiles and highlighted the need for a robust IAMD ("NATO Washington Summit Declaration," 2024). The proliferation of technology is a concern not just from state actors, but also non-state entities and terrorist regimes. A comprehensive, 360-degree approach is a hallmark of NATO and of IAMD, and thus systems are needed to address both high- and low-tech air threats from a variety of states or terrorist organizations. Without such defenses, NATO risks air vulnerability, particularly along its eastern flank, where Russian drones and missiles have breached NATO airspace in Romania and Latvia.

In the war in Ukraine, IAMD has been vital to the country's defense. With relatively stable front lines, the conflict has shifted to large-scale air assaults using One-Way Attack (OWA) drones and ballistic missiles. The provision of missile defense systems has been crucial to Ukraine's ability to maintain control of its airspace and hold at bay Russian ground forces. If Ukraine had lost air superiority to Russia early in the conflict in 2022, the war would have been lost quickly. Likewise, if Ukraine were to lose the air

war today and should its IAMD fail, a loss on the ground would likely follow. This highlights the importance that needs to be placed on defending NATO skies today.

## III. THE RISE OF DRONES: ASYMMETRIC COST AND TACTICAL INNOVATION

The rapid proliferation of drone technology, particularly low-cost drones, has posed a significant challenge to expensive military systems. In Ukraine, $500 hobby drones have repeatedly and effectively targeted and destroyed multimillion-dollar assets, such as main battle tanks, expensive radar systems, and command and control nodes. The success of hobby drones highlights the asymmetric cost advantage of these types of weapons. These drones, which are cost-effective and adaptable, often evade traditional air defense systems. Many modern IAMD sensors were originally designed to detect high-speed threats and they have struggled with low and slow-moving drones, requiring adaptation. Additionally, shooting down a $10,000–$20,000 drone with a $1–$4 million missile is economically unsustainable, making this imbalance a major concern in modern warfare. Both Ukraine and NATO must get on the right side of the cost curve going forward, especially if a conflict is to enter a phase of attrition as it has in Ukraine.

Ukraine has become a testing ground and research laboratory for drone use in combat, and NATO is in a unique position to benefit from the lessons learned by Ukraine. This is not the first conflict with drones, but the scale is unlike anything prior, and the innovation is staggering. Both Ukrainians and Russians are adapting to widespread drone use for attacks as the destruction of ammunition stocks and the limited supply of artillery has driven an increased reliance on linking artillery support with drone support teams for targeting. Other tactical innovations are appearing such as an increased reliance and more proficient use of “shoot-and-scoot” tactics to limit the success of counterbattery attacks by drones (Jack Watling and Nick Reynolds, 2024). Additionally, Electronic Warfare (EW) has been a developmental testbed in this war of drones, as each side seeks to counter the signals used to operate and control the drones. The Russians have proven particularly adept at EW and have placed a special focus on ensuring the emplacement of powerful jammers nearly every 10km of the frontline (Jack Watling and Nick Reynolds, 2024). The success of new tactics, techniques, and procedures in Ukraine should be watched closely and be harnessed and implemented into NATO IAMD modernization.

## IV. CURRENT IAMD CHALLENGES

The primary challenge NATO faces today in terms of IAMD, is the extreme cost imbalance between the offense and defense. As previously mentioned, the low-cost, low-flying, and very slow drones have proven a challenge for modern radars and sensors that are tuned and optimized for higher-flying and faster targets. And, when these low and slow targets are tracked and engaged, the modern inceptors used in state-of-the-art missile defense systems are, more often than not, orders of magnitude more expensive than these aerial threats they are engaging. Russia has capitalized on this by deploying large waves of One-Way Attack (OWA) drones in conjunction with cruise missiles and even hypersonic ballistic missiles. A coordinated attack using a range of altitudes, speeds, and numbers can quickly overwhelm an IAMD, and the Russians have used this tactic to great effect. This is of concern for NATO countries, as it is quite feasible that Russia, or even a non-peer adversary such as Iran, could potentially level the playing field against more technologically advanced NATO forces, and hold NATO territory or populations at risk.

While NATO seeks to close these vulnerabilities, particularly in low-altitude detection and tracking, key systems like the E-7A Wedgetail (a replacement for the NATO AWACS), which are quite capable of scanning the low-altitude environment, are still years away from full deployment. U.S. Air Force General James Hecker, Commander of NATO Air Command, recently highlighted that while the E-

7A will greatly enhance NATO's ability to detect and track low, slow-flying drones, interim solutions are urgently needed (Joseph Trevithick, 2024).
Another pressing issue related to the cost curve imbalance between the offense and defense is the financial strain on both the U.S. and European NATO Allies' militaries. The U.S. is currently fielding its smallest military in 80 years, and European nations have faced even deeper budgetary cuts. While Western-supplied surface-to-air missile (SAM) systems have been relatively successful in intercepting 60-80% of aerial threats in Ukraine, Russia's use of large drone salvos has depleted Ukraine's interceptors, making them increasingly dependent on Western supplies. This has become a significant burden on Western economies, which are already dealing with inflation and war-weary populations. Balancing the financial costs of defense while maintaining public support for continued military aid to Ukraine is becoming an ongoing challenge for NATO countries. One of the keys for NATO is to begin building and developing IAMD systems with more sustainable costs before they are urgently needed. Moreover, proactive development allows for a gradual integration of newer technologies into NATO's IAMD network, reducing the strain on already limited defense budgets.

## V. MULTILATERAL AND NATIONAL APPROACHES TO STRENGTHEN IAMD

To strengthen both NATO and Ukrainian IAMD alike, nations must adopt a strategic, multilateral approach focused on three key corrections. First, NATO countries need to get on the right side of the cost curve by adapting existing technologies and developing new defenses that can effectively counter the masses of inexpensive aerial threats. Second, nations should prioritize testing and developing IAMD systems as a collective bloc rather than in isolated national programs. This will allow for better interoperability and will ensure that national IAMD systems are seamlessly integrated into NATO's broader defense framework if nations are using a joint procurement strategy. Finally, NATO members must not only work to ensure that national legislation allows combat commanders the broad authorities to engage hostile targets, but they must also establish cross-border legislation that allows the sharing of air tracking data across national boundaries, which allows a seamless handoff from one nation's defenses to another nation's defenses, thus enabling more coordinated and efficient defense operations.
The priority is reducing the cost of defending against low-cost threats by leveraging existing technologies and experimenting with innovative solutions. The proliferation of inexpensive drones and other aerial threats poses a significant challenge to traditional IAMD systems. By adapting older technologies and developing new ones specifically aimed at these cheaper threats, NATO can shift the cost balance. For example, systems like acoustic networks deployed along national perimeters, offer a low-cost method to detect and track drones and cruise missiles. Acoustic methods have been used since the First World War, but these fell out of widespread use with higher-flying aircraft. Now, with masses of low-flying drones penetrating their airspace, the Ukrainians have found that acoustic networks are quite successful at triangulating and tracking the buzz of drones. Such systems avoid the need for costly airborne sensors, demonstrating that even older technologies can be adapted and contribute meaningfully to IAMD. Ukraine's newly declassified acoustic system has been used to great effect and is the exact type of system that NATO should be looking to replicate or buy outright from Ukraine. The microphones used in Ukraine's "Sky Fortress" system pick up the sound of buzzing drones and cruise missiles and triangulate the position and direction of the target. Whereas a single radar costs about 6 million dollars and would need to be placed every 10 kilometers to pick up a low-flying target at 100 feet, these microphones merely cost between 300 and 500 dollars each and function quite well being placed every 4-5 kilometers (Ukraine Joins NATO Counter-Drone Exercise for First Time, 2024). The entire eastern flank of NATO could be covered by a Sky Fortress system for a very modest cost. This is a far more economical solution and the exact type of actions need to get on the right side of the cost curve. Affordable systems like this present a cost-effective

solution for smaller NATO members that have skies to protect and want to contribute, but that lack the billions required to fully develop and deploy a modern IAMD with only high-tech equipment. By adopting such systems, even the smallest of NATO Allies and partners can contribute to the Alliance's defense and help counter large salvos of drones and missiles. This approach underscores the importance of aligning national defense strategies with NATO's broader goals, ensuring that all members, regardless of size or budget, can participate in safeguarding the Alliance's airspace. Cost savings need to be found not only in tracking but also in the destruction of hostile aerial targets. If drones can be tracked and predicted flight paths determined, mobile fire teams can be coordinated and moved into position to fire on the drones with low-cost Anti-Aircraft Artillery as opposed to expensive missile interceptors. Ukraine's relatively robust system of 8000 microphones time and again successfully guides these mobile fire teams to their targets, leaving very few places these OWA drones can hide ("US General Discussed the Work of the Ukrainian Acoustic Drone Detection System," 2024). This system of using old-fashioned machine guns on trucks has proven very effective and is now being tested by NATO nations in recent concepts of operations at Ramstein Airbase and in the Netherlands (Ukraine Joins NATO Counter-Drone Exercise for First Time," 2024).

Balloons have been used in war since the mid-19th century and they are another form of cheap defense that should be looked at by NATO. Hot air balloons have been used in Ukraine to confuse thermal targeting, and now, barrage balloons with protective nets are being used to defend critical targets (Kateryna Hodunova, 2024). These types of balloons can be raised quickly in the event of an attack and use lightweight nets to protect ingress routes. These types of tactics were used in WWII frequently and are being revived by the Russians. Cheap and effective barrage balloons are one more way to fight to get on the right side of the cost curve of IAMD.

The second priority for NATO is fostering multilateral collaboration to test and develop IAMD systems and sending clear demand signals to industry for research and development (R&D). When nations act as a bloc rather than pursuing individual programs, they can better integrate their common air defense capabilities into NATO's larger architecture. This will also encourage greater interoperability between national IAMD systems, strengthening the Alliance's collective defense posture. Recent demonstrations, such as the joint showing and testing of the Sky Fortress system to various NATO nations, highlight the benefits of multilateral development (NATO Shows Interest in Ukrainian Acoustic Detection Networks for Air Defense). By working together, NATO members can share resources, avoid duplication of efforts, and ensure that new technologies are developed with interoperability in mind, which is critical for tying national systems into the larger NATO structure.

A focus on defense spending cannot be emphasized enough. Industry watches defense spending closely as it is a key signal for them to invest in R&D and the retooling of factories. National defense spending is a priority, but as NATO nations pool their money and buy common products the R&D costs can be shared and not duplicated, further encouraging businesses to make the investments needed to develop and test new systems. Interoperability will be the big winner in the long run.

Lastly, NATO must implement cross-border legislation to allow for more seamless coordination in air defense. The ability to track and engage aerial threats as they cross national borders is essential for the effectiveness of IAMD systems. Currently, many national air defense systems often only operate within their own boundaries, which can create grey areas near borders and limit the Alliance's ability to respond rapidly to threats near border areas. Determining who has engagement authority can be complicated. Legislation that allows for quick passing and transfer of engagement authority on air tracks across borders would enable more effective command and control, ensuring that threats are addressed in a timely and coordinated manner and that ground commanders have the authority needed to engage when they need it. Threats often move quickly and coordinating shot doctrine is critical. This cross-border collaboration is vital for addressing the complex, multi-layered nature of modern aerial warfare, where threats can emerge from various directions and altitudes.

In sum, the focus for NATO Allies and partners should be a multilateral approach that looks to adapting and creating cost-effective technologies, collaborating on testing and development, and enacting cross-border legislation to strengthen NATO's IAMD capabilities. As the nature of aerial threats evolves, particularly with the rise of low-cost drones and cruise missiles, NATO must stay ahead of the cost curve and ensure its skies are well-defended. These steps will not only help NATO nations individually but will also enhance the collective defense of the Alliance, allowing it to meet future challenges with greater resilience and preparedness.

## VI. CONCLUSION

In conclusion, the centrality of Integrated Air and Missile Defense cannot be overstated. NATO must prioritize the development and deployment of robust IAMD systems not only to support Ukraine, but also to defend its own skies. The threat is not confined to the eastern regions—countries like Portugal and Spain are also at risk, as ballistic missiles and drones can easily overfly national borders. IAMD is an alliance-wide concern because, in modern aerial warfare, every nation is on the front line.
Events from recent conflicts demonstrate that any future attack on NATO will almost certainly begin in the air, underscoring the importance of maintaining air superiority. The devastating loss of Mariupol is a reminder of the consequences when air superiority is lost. To avoid a similar fate, NATO must ensure the skies are defended at all costs. By investing in sustainable IAMD solutions now, NATO can effectively protect its airspace and secure its future.

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# ORGANISED CRIME, DRUG TRAFFICKING AND THE DIGITAL WORLD: A CONCISE PERSPECTIVE

***[a] Gheorghe BUNEA, Senior Lecturer Ph.D., [b] Ioan Marius POP, Ph.D. candidate***

*"Bogdan Vodă" University of Cluj-Napoca,*
*email:buneagheorghe@yahoo.com*

*Institute of History of the Romanian "George Barițiu" Academy in Cluj-Napoca*
*email:i.marius.pop@gmail.com*

**ABSTRACT**
*Exploring the interaction between organised crime and cyberspace, particularly the use of the dark net for drug trafficking, provides essential insights into the evolution and challenges of crime in the digital age. This article details how criminal organisations exploit the anonymity and advanced technological resources of the dark net to operate global drug trafficking networks.*
*The complex methods of shipping and encrypted communication are also examined, illustrating the difficulties faced by law enforcement agencies in tracking and combating this type of crime.*
*This article highlights the importance of studying the interaction between cyberspace and organised crime, showing how they influence the global dynamics of drug trafficking.*

**KEYWORDS** *Organised crime, drug trafficking, cyberspace, dark net, globalisation*

***J.E.L Classification:*** K1, K14, K15, K19

## 1. INTRODUCTION

Globalisation, an economic, social, political, and cultural process of interconnecting all these fields internationally, has gained significant momentum in recent decades. Alongside its positive effects on socio-economic and political realities, it has also brought with it a dark, negative side: the proliferation of cross-border crime and the interconnection of organised crime groups. In the past, these groups were isolated and exerted influence over a limited geographical area. The emergence and development of the Internet, which has been the primary fuel for globalisation, has led to the virtual interconnection of various organised crime networks from different regions of the world. These networks, geographically isolated in terms of their sphere of influence, are now just a click away in cyberspace. Thus, the supply of illegal products, goods, and services has become directly connected to demand, in a virtual space that, in addition to the obvious benefits of interconnection and the elimination of physical distances, also ensures security, discretion, and confidentiality, both regarding the identities of the parties involved and the details of the illicit operations (Amza T.,1998). In this context, international drug trafficking has seen exponential growth, becoming today one of the most prolific criminal phenomena worldwide. For example, the 2023 Global Cocaine Report shows that in 2020, around 2,000 tonnes of cocaine were produced globally, with a market value of approximately 200 billion USD, against the backdrop of growing demand for this type of drug on the illegal drug market. Communication, transport, and trade networks, developed in the context of globalisation, are being fully exploited by organised crime groups to transfer drugs from production

areas to illicit markets and, ultimately, to consumers. The same vast global logistical platform is also extensively used for money laundering derived from criminal activity, which, when reintegrated into the economy, endangers the economic and social stability of states through the corruption and high levels of criminality it generates.
From the above, three main terms stand out, which are the focus of this article: organised crime, drug trafficking, and the virtual world, cyberspace. In the following chapters, we will attempt to briefly analyse each term individually, followed by an examination of how they intertwine, interconnect, adapt, and reconfigure, thus giving rise to a global criminal enterprise. In the past, this was typically represented as an "octopus," but now it also includes a digital component (Amza T., 2007).

## 2. ORGANISED CRIME

From the outset, the attempt to define organised crime is problematic, with a wide range of definitions, some of which are even contradictory. The German criminologist Klaus von Lampe published on his website "Klaus von Lampe (organized-crime.de)" around 200 definitions taken from academic sources, official documents, and various dictionaries. At present, we cannot assert that there is a universally accepted definition of the term "organised crime." The issue arises from the fact that the term did not emerge and establish itself through scientific research in the field of social sciences, but rather through extensive use in the media, literature, politics, and legal language.
The term "organised crime" was first used by members of the "Chicago Crime Commission," an institution created in 1919 in the USA, in Chicago, to combat crime in the city. The term was used to refer to professional criminals who engaged in committing crimes as a business model. Later, the concept was adopted and used to highlight gangsters, bandits, and swindlers, who gathered in organised gangs or groups, under the leadership of certain leaders, thus implying a hierarchical structure within these criminal groups.
The main problem in the multiple attempts to define organised crime does not stem from the term "crime," but from the term "organised," a qualifier that causes significant confusion, being used to refer both to the organisation of complex criminal activities and to the organisational structure of the criminal groups engaged in such activities. Thus, within the concept of organised crime, two components emerge: the criminal activity, which is organised, and the organised criminal group that commits such crimes.
Some definitions focus on the criminal activities, mentioning tangentially that these activities must be committed by a group of people, without emphasising the characteristics of the group. According to the Canadian sociologist Margaret E. Beare, "organised crime is a process or method of committing crimes, not a distinct type of crime in itself. Organised crime is an ongoing activity, which involves continuous criminal complicity, with a structure larger than a single member, with the potential for corruption and/or violence to ease the consequences of criminal prosecution." In the Netherlands, the Van Traa Parliamentary Commission report from 1996 states that: "organised crime is discussed when groups of people primarily focused on illegal gains systematically commit crimes that have serious consequences for society and are capable of successfully protecting their interests, especially by being prepared to use violence or corruption to control or eliminate individuals."
In the UK, the National Crime Agency, the main public institution for combating organised crime, states that "organised crime can be defined as serious crime that is planned, coordinated, and conducted by people working together on a continuing basis. Their motivation is often, but not always, financial gain.
The above definitions, like many others, focus primarily on describing organised crime from the perspective of the crimes committed, without emphasising the characteristics of the organised criminal group that commits them.

On the other hand, several definitions of the concept of organised crime focus on the structure and characteristics of the organised criminal group. In the USA, the main public institution for combating organised crime, the Federal Bureau of Investigation (FBI), defines the concept as "a group of individuals with an identified hierarchy or similar structure, engaged in significant criminal activities. These organisations often engage in multiple criminal activities and benefit from extensive support networks." In the same vein, the Internal Revenue Service (IRS) states that "organised crime refers to those associations of individuals or groups that are self-perpetuating, structured, and disciplined, associated for the purpose of obtaining financial or commercial gains, entirely or partially through illegal means, while at the same time protecting their activities through a pattern of bribery and corruption."

A comprehensive definition should include references both to the organisation of criminal activities and to the organisational structure of the criminal groups that carry out such activities. One of the most widely accepted and used definitions is provided by the 2000 UN Convention against Transnational Organised Crime in Palermo. In Article 2, the focus is mainly on the organised criminal group, rather than on organised criminal activity: "Organised criminal group means a structured group of three or more persons, existing for a period of time and acting in concert with the aim of committing one or more serious crimes established in accordance with this Convention, to obtain, directly or indirectly, a financial or other material benefit." This is one of the most widely accepted definitions, and its influence can be seen in the text of Article 367, paragraph 6 of the Romanian Penal Code: "An organised criminal group means a structured group, consisting of three or more persons, constituted for a certain period of time and acting in a coordinated manner, with the aim of committing one or more crimes."

(Finckenauer) The main characteristics of the concept of organised crime, analysed from the perspective of multiple definitions, are: it presents a hierarchical structure, access to the group is restricted and exclusive, criminal activities are continuous, characterised by the use or threat of violence, it manifests as illegal entrepreneurship, often penetrates legal business environments, lacks an ideology (this being the main difference between organised crime and terrorism), and uses corruption as a subtle means of penetrating social, political, and administrative environments. These characteristics combine elements specific to the organisation of criminal activities with those specific to the organisation of group members.

German criminologist Klaus von Lampe proposes analysing organised crime through three fundamental aspects, which in his view are: criminal activities, the structure of organised criminal groups, and illicit governance. Criminal activities include market-based crimes where illegal goods or services are traded, property-related crimes such as thefts and robberies, and regulatory and governance crimes that involve imposing rules of behaviour and resolving conflicts in an illegal context. The structure of organised criminal groups involves describing how criminals associate and cooperate, especially in the uncertain conditions characteristic of illegal markets. Illicit governance manifests as self-regulation in an illegal context, where organised criminal groups establish and enforce rules and resolve disputes regarding payments and profits. Furthermore, the author notes that for these groups to be effective, they must have at least a rudimentary hierarchy, a system for issuing orders, and continuity over time.

Thus, we can divide the concept of organised crime into two constituent elements: organised crime, meaning serious crimes of great complexity, requiring a certain rigour and organisation in planning and execution, such as drug trafficking, human trafficking, money laundering, etc.; and the organised criminal group, meaning a group constituted on certain principles of functioning and interaction, with the aim of committing the types of crimes previously described.

As the multitude of definitions suggests, the organised criminal group exhibits certain fundamental characteristics, which are found in most such groups, regardless of the geographical area in which they operate, the way they are organised, or the types of crimes they commit.

(a) From a numerical perspective, organised criminal groups consist of three or more people, as we have seen above from the definitions provided by the 2000 UN Convention against Transnational Organised Crime in Palermo, in Article 2, and Article 367, paragraph 6 of the Romanian Penal Code. These groups exhibit a hierarchical command structure organised vertically, typical of organised crime groups in Sicily, or a horizontally organised command structure, in a network-like format, with power distributed between clans (`Ndrangheta). Both organisational structures share the common feature of having a supreme leader, with subordinates having clearly defined roles, a chain of command, and a code of conduct unique to each group.
(b) They are constituted for the purpose of committing serious crimes, through which they seek to obtain financial, material, or other types of benefits within the territory they control. Criminal proceeds are generally invested to maintain power within the controlled territory and to expand it, with the ultimate result being even greater power, which could, in fact, be defined as the true goal of the organised criminal group. One of these serious crimes, which will be analysed in detail in the next chapter, is drug trafficking.
(c) These groups demonstrate continuity over time, both in terms of the organisation of the group and in terms of committing serious crimes. This characteristic ensures that organised crime groups can accumulate material, financial, and logistical resources, which are consolidated over time and reintegrated into the legal circuit through complex money laundering operations, thereby reintegrating the resources obtained in this way into the regular economic flow of society. Thus, over time, there is an accumulation of financial power, which later translates into political, social, and economic influence. The organised crime group then exerts a strong influence on society, through acts of corruption and, where this fails, through strategic violence. Furthermore, by repeatedly committing a specific type of crime, the organised group becomes highly specialised in committing that type of crime (complex modus operandi, distribution networks for illegal products and services, access to markets). Therefore, we will encounter groups specialised in committing various types of crimes: drug trafficking, arms trafficking, smuggling, human trafficking, extortion, loan sharking, money laundering, etc.
(d) The group achieves its objectives through corruption and/or strategic violence. Corruption, especially in recent times, represents one of the main ways in which organised crime groups exert their influence on society, forming so-called "monstrous strategic alliances" with authorities and state representatives at the political, judicial, and police levels, benefiting both parties. As mentioned earlier, where corruption does not succeed, violence is used to intimidate, blackmail, or even eliminate adversaries. Thus, violence is not used randomly or impulsively, but rather after a strategic calculation that benefits the entire group and maintains a certain level of reputation and the ability to exercise violence against any external element that might harm the group.
(e) Generally, members of organised criminal groups take an oath of loyalty, both to the group's members and its leadership, as well as to a set of rules and principles that regulate the organisation and functioning of the group, conduct, and sanctions applicable to any breach. Thus, loyalty to the group represents one of the main values embraced by each member, and the internal regulations, which directly conflict with the legislative system adopted by society, form the framework of action and movement for each member.
(f) The organised criminal group exerts its influence and power over a certain territory. Moreover, influence over a territory and its expansion represent the dynamic element of the group's criminal activities. Control over a territory generates power, which in turn generates financial resources, money, which translates into even more power, creating a vicious circle. This dynamic ultimately leads to the group's ultimate goal: even more power.
(g) Organised crime groups are non-ideological, which essentially differentiates them from terrorist groups that unite under various social, political, or religious ideologies. There are certain structural similarities, but the lack of ideology is the main difference. The objectives of organised crime groups, as previously mentioned, are power and money.

## 3. DRUG TRAFFICKING

Drug trafficking represents one of the most severe global challenges of the 21st century, affecting public health, economic stability, and national security. In the following lines, we will briefly explore the dimensions of drug trafficking, the actors involved, its impact on society, and the strategic measures that need to be adopted to combat this phenomenon. Drug trafficking is a complex global business, involving the production, distribution, and sale of illegal substances. The main drugs trafficked include cocaine, heroin, amphetamines, methamphetamines, cannabis, and more recently, new psychoactive substances (NPS)—referred to in Romania as ethnobotanicals, legal highs, etc.—and fentanyl and its derivatives (Koob, George F, and Nora D Volkow.*2016).*

**Routes and Origin of Drugs**

The trafficking routes vary depending on the origin of the drugs. Cocaine is predominantly produced in Latin America, heroin in Southwest and Southeast Asia, cannabis mainly in Morocco, the Netherlands, Spain, and Albania, while amphetamines, methamphetamines, and NPS are primarily produced in the Netherlands, Poland, and China. Fentanyl is mainly produced in China.

**Actors Involved in Drug Trafficking**

The primary actors involved in drug trafficking are organised crime groups specializing in the drug trade, controlling large-scale drug production and distribution. These groups use violence and corruption strategically to maintain control and power over territories (e.g., South American cartels). Some of these groups are involved in drug production, controlling, through violence or financial leverage, poor farmers in economically and socially underdeveloped regions who are often forced into growing drug plants like coca, opium, and cannabis due to a lack of alternative economic opportunities.

In the case of synthetic drugs, some groups organise fully equipped illegal chemical laboratories, often well-hidden or mobile (in trucks, yachts, RVs), benefiting from collaboration with other criminal groups specializing in trafficking drug precursors and pre-precursors.

**The Importance of Drug Transportation**

Another critical segment in the drug distribution chain is wholesale transportation, both nationally and internationally. This segment bears the highest risk of detection of large quantities of drugs, potentially leading to massive financial and human resource losses for organised crime groups. To avoid such situations, organised groups create sophisticated operating methods involving a combination of corruption, violence, and a wide range of criminal activities (such as cybercrime, forgery, blackmail) to support their illicit operations.

In drug traffickers' economic calculations, the priority is not the cost-to-distance efficiency ratio but the cost-to-safety ratio of the transport. In documenting the criminal activities of organised groups specializing in drug trafficking, it was found that they used atypical routes and methods, passing through territories where transport safety was ensured through corruption or cooperation with other organised crime groups or even terrorist organisations (Koob, George F, and Nora D Volkow.,2016).

**The negative effects of drug trafficking on society:**

1. **Public Health**: Drug use causes addiction, chronic diseases, overdoses, and deaths, overburdening healthcare systems. Additionally, conditions associated with drug use, such as HIV and hepatitis, spread quickly through shared needles.
2. **Economy**: Economies are affected by the loss of productivity, increased spending on healthcare and security, and the corruption associated with drug trafficking.
3. **National Security**: Drug trafficking is often accompanied by violence and organized crime, destabilizing communities and entire nations.
4. **Society**: Drug trafficking contributes to the degradation of social values, increased crime rates, and the fragmentation of communities.

To effectively combat drug trafficking, an integrated and multidimensional approach is needed through:

1. **Law Enforcement Strategies**: International collaboration between law enforcement agencies is essential to dismantle trafficking networks. These strategies include operations to intercept, track, and seize drugs and the vast sums of money generated from this illicit activity, as well as actions against the leaders of criminal organizations. Special attention should be given to money laundering activities, where funds from drug trafficking are reintroduced into the legal economy through complex financial schemes. If drug trafficking generates hundreds of billions of dollars annually, a legitimate question arises: where is this money, and how does it enter the legal economy, avoiding authorities' scrutiny? It is unlikely that it is buried underground, as in the case of the notorious Pablo Escobar. The fight against drug trafficking is fierce, but the battle to confiscate the material, financial, and logistical resources of organized crime groups can be significantly improved. This is the vulnerable spot of organized crime groups, which can lead to their effective dismantling. Without these resources, it is unlikely that a criminal group hit by law enforcement action will regenerate quickly and regain its former power.
2. **Prevention and Education**: Education and prevention programs are crucial for reducing the demand for drugs. These should target youth, especially through awareness campaigns on the risks associated with drug use.
3. **Treatment of Addiction**: Healthcare systems must provide adequate treatment and rehabilitation services for drug addicts. This includes access to medication-assisted therapies, psychological counseling, and social support.
4. **Economic Development**: Offering economic alternatives for drug growers and developing impoverished communities can reduce their dependency on drug trafficking. Investments in sustainable agriculture, infrastructure, and education are essential.
5. **Political and Legal Reforms**: Reforms that strengthen the rule of law, reduce corruption, and improve the efficiency of the justice system are necessary to support efforts to combat drug trafficking.

Drug trafficking remains a major global challenge that requires a complex and coordinated response. Successful approaches involve a combination of law enforcement, prevention, treatment, economic development, and political reforms. Only through international collaboration and a comprehensive strategy can we reduce the devastating effects of this phenomenon on society. This paper has emphasized the importance of a holistic response to address all aspects of drug trafficking and to protect the health, security, and prosperity of communities worldwide.

## 4. CYBERSPACE

Cyberspace is a vast and complex realm that includes multiple layers, each with its own characteristics and accessibility. In this paper, we will explore the three main layers of cyberspace: the surface web, the deep web, and the dark net, to better understand the structure and dynamics of this digital environment.

The **surface web** represents the part of the internet accessible through standard search engines like Google, Bing, or Yahoo. It includes websites that are indexed and can be accessed directly via links or searches. The surface web is frequently used for daily activities such as reading news, watching videos, and using social networks. It is the most visible and accessible layer of the internet but represents only a small fraction of the entire cyberspace.

The **deep web** contains web pages that are not indexed by standard search engines. This includes resources such as databases, digital archives, government reports, medical records, and other types of information protected by authentication systems or behind paywalls (a method used by some websites, particularly news sites and digital publications, to restrict access to their content, allowing

only paying users to access complete articles, videos, or other materials). The deep web is much larger than the surface web and is essential for the protection of sensitive data and information.

The **dark net** represents a small section of the deep web, accessible only through special software such as TOR (The Onion Router) or I2P (Invisible Internet Project), which anonymize users' identities. The dark net is often associated with illegal activities, such as drug trafficking, arms dealing, human trafficking, child pornography, and other illegal goods, but it is also a space for terrorists, activists, and others who need anonymity to avoid detection, persecution, or censorship.

Understanding the structure of cyberspace and its different layers is essential for navigating this digital environment effectively and safely. Each layer of the internet has its role and importance, from the accessibility and transparency of the surface web to the privacy and anonymity offered by the deep web and dark net.

Cyberspace, by its omnipresent nature, has facilitated globalization on an unprecedented scale. The internet has allowed companies to operate and collaborate globally, eliminating geographical and temporal barriers. E-commerce platforms like Amazon and Alibaba are clear examples of how cyberspace has transformed global commerce, allowing sellers and buyers from different corners of the world to interact almost instantly. Cyberspace has accelerated the exchange of information, ideas, and cultural influences, central features of globalization. Social networks like Facebook, Twitter, and Instagram enable individuals to instantly share aspects of their daily lives, politics, and cultural events, contributing to greater global awareness and the formation of a globally interconnected culture. Globalization and cyberspace have transformed education, making it more accessible to people around the world. Online learning platforms offer courses from top universities without the physical necessity of being present on campus. This phenomenon not only democratizes education but also fosters a more educated and diverse global workforce.

Globalization facilitated by cyberspace also brings significant challenges. Issues such as cybersecurity, control and censorship of information, and impacts on the labor market and economic disparities are increasingly prominent. Moreover, while some regions benefit from access to information and technology, other areas remain isolated, exacerbating global inequalities.

Globalization and the expansion of cyberspace have also created significant opportunities for cybercriminals. Cybercrime transcends national borders, making monitoring and legal jurisdiction challenging. For example, ransomware attacks can be launched from anywhere in the world, locking access to critical systems and demanding substantial ransoms for their release. Globalization has also facilitated illegal trade through the dark net, where goods range from drugs and weapons to stolen personal data. Differences in cybersecurity regulations and law enforcement between countries provide cybercriminals with the opportunity to operate in regions with less stringent laws, allowing them to evade prosecution and continue illegal activities with relatively low risk. A notable example is the use of offshore jurisdictions for laundering money obtained through cyber fraud.

To combat global cybercrime, closer international cooperation is essential in terms of information sharing and law enforcement coordination. Initiatives such as the Budapest Convention on Cybercrime are crucial, providing a framework for international cooperation. Cybercrime affects not only individuals but also businesses and governments, causing significant economic losses and undermining trust in digital systems. The effects can spread beyond immediate victims, impacting financial stability and national security.

As technology continues to advance, it is crucial for legislation and international collaborations to evolve accordingly to protect society against emerging threats. The relationship between cyberspace and globalization is profound and complex. As these two forces continue to evolve, they will further reshape the socio-economic and cultural structure of societies globally. It is essential to recognize and address both the opportunities and challenges presented by this interaction to ensure a fair and secure future for all global citizens.

## 5. INTERCONNECTION BETWEEN ORGANIZED CRIME, DRUG TRAFFICKING, AND CYBERSPACE

Organized crime has adopted cyberspace as an effective tool for expanding its activities, including drug trafficking. Cyberspace offers anonymity and a vast network of rapid communications, essential for global coordination and distribution. For example, the dark net, accessible through special networks that ensure anonymity, has become a predominant place for the sale and distribution of illegal drugs. Platforms on the dark net allow users to purchase drugs using virtual currencies like Bitcoin, complicating the tracking of transactions by legal authorities. Markets on the dark net, such as the former Silk Road, AlphaBay, and Hansa, have provided interfaces similar to those of major online retailers, including seller rating systems and product reviews. These platforms facilitate transactions between anonymous sellers and buyers worldwide, making it extremely difficult for authorities to track illegal activities.

Organized crime leverages anonymity technologies to mask its activities. The use of cryptocurrencies in transactions makes it challenging to trace financial flows. These virtual currencies offer a high degree of anonymity and are often preferred for illegal transactions. Regulating these currencies is difficult since they are not part of the traditional banking system and do not adhere to standard monitoring and reporting rules. They use advanced encryption technologies to conceal the identities of those involved in transactions.

Delivery and concealment methods are innovative and varied, from using anonymous mailboxes to "dead drops," where drugs are hidden in secure locations to be later picked up by buyers. Organized crime often employs complex logistics and concealment methods to cross international borders, such as incorporating drugs into ordinary objects to avoid detection by traditional border security measures.

Communication between participants in the dark net market is encrypted, using secure emails, encrypted instant messaging, and other forms of digital communication to prevent interception. These measures are crucial for protecting identities and maintaining operational secrecy.

Law enforcement faces significant challenges in combating drug trafficking facilitated by cyberspace. Different jurisdictions and the lack of clear international agreements complicate efforts to combat this type of crime. Additionally, the limited ability to intercept encrypted communications and track anonymous transactions delays authorities' responses. This requires closer cooperation between national and international agencies and the development of advanced tracking and analysis technologies. Authorities' ability to track and stop drug trafficking on the dark net is severely limited by the anonymity provided by cyberspace technologies. Despite notable successes, such as the takedown of the Silk Road and AlphaBay markets, the reactive nature of the law makes it difficult to anticipate and swiftly neutralize new markets that are constantly emerging.

The social impact of online drug trafficking is profound and multidimensional. Beyond the public health issues associated with easy access to drugs, there are also secondary effects related to the criminality associated with drug trafficking, such as violence, corruption, and community destabilization. Cyberspace not only facilitates drug distribution but also disseminates information about drug use and production, creating new challenges for health education and prevention.

The interconnection between organized crime, cyberspace, and drug trafficking highlights the urgent need for adaptive cybersecurity strategies and laws that can effectively respond to these modern threats. A proactive and innovative approach is crucial to combat these illegal networks and protect society from their harmful effects.

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# AI TOOLS IN TEACHING PHYSICAL EDUCATION AND SPORTS

***Eva ACQUI, Associate professor, Ph.D.***
*,,Bogdan Vodă" University of Cluj-Napoca*
*email: evaacqui@yahoo.com*

***Gheorghe SABĂU, Lecturer Ph.D.***
*,,Bogdan Vodă" University of Cluj-Napoca*
*email: gsabau05@yahoo.com*

**ABSTRACT**
*Artificial intelligence has found its role in enhancing teaching and research in physical education and sports, providing possibilities for a high quality education in the field. On searching for uses and applications on several specialized sites in the use of AI in the field, we have concluded that it is important to understand how AI can be involved in teaching physical education and sports, what its role is, what the actual AI tools that can support teachers in their activities are, what the future of teaching becomes through the use of AI and its specialized tools, and the ethical considerations related to practice. The presentation of the principles of AI use, tools, and resources stands as a guideline for the enhancement of teacher training, directing it to the proper use of resources, and forms the skills for further research and application of knowledge in the rapidly improving field of learning and teaching with the latest tools and methods available.*

**KEY WORDS:** *AI tools in PE, PE and sports, teaching PE, uses of AI in PE*

**JEL CLASSIFICATION:** Z20, Z28, Z29

## 1. INTRODUCTION

Our curriculum for training students as teachers of physical education and sport includes courses on computer-aided instruction, for which we have searched the ways AI tools can be included in the related teaching and learning activities, basing on our observations on student response to the use of such tools, on observations and conclusions of materials published by other specialists on the use of AI in physical education and sport training, on specialized applications for this purpose, on the generative AI response to our prompts on the subject, in the attempt to optimize our courses and make our instruction process more efficient and applicable for students.
Physical education and sport students need to have detailed training in the use of computers in their teaching and learning activities, as future teachers of this subject. They have done research on their own on the possibilities of using AI in learning and generation of various materials needed for assessment. They rely on ChatGPT, even extensively, in an uncoordinated manner. They lack training in how to generate proper materials, how to select information and use it for their assignments. They still have to understand the responsibility in using generated materials. They also need to be trained to rely on their knowledge in the selection of generated information.
With basics in the use of several applications, they can approach AI tools, but they need to be provided proper suggestions on selecting a tool, with information on what the tool can do, on usage, what result can be obtained, and what the generated material, be it image, video, audio can be used for. Short

assignments to interact with the apps need to be provided, for them to learn how to use apps properly, how to select them, until they can access an AI library and select their own tools.
When we update the computer-aided instruction courses, the focus is on the inclusion of image, video, audio material generating tools and possibilities to include these in the course content. Besides, students need prior training in teaching methodology to decide on their choices of planning, on their own selection of materials.
Their reaction to AI possibilities is enthusiastic, but they need to understand the additional volume of work required by the learning of proper use of AI tools. They also have to get used to documentation and search for information on what AI can provide them with on specialized sites in using AI tools in physical education and sport teaching.
As teachers, students need to observe the technological component of their training and activity, which includes several skills already considered basic: communication by technology, presentation tools, website and blog creating tools, assessment tools, lesson planning tools, digital portfolio creation tools, online teaching platform proficiency, wearable devices.
Adding to the above skills, there comes training in the use of AI- provided possibilities and tools, the use of specialized sites and customization of materials generated, changes in teaching methodology, content creation using AI tools, assessment tools, and the use of results for changes in content and practical training with all the other related elements.
The use of AI tools in teaching and learning also ensures multimodality. Communication is both digital and multimodal. Most of the accessed texts include other means of communication such as images, video and audio elements. Nowadays communication has become more than writing and speaking, and knowledge is based on more elements than language. There are five modes of communication: linguistic, audio, visual, gestural and spatial. When a text contains several communication modes, the text is multimodal, and it can be either in print or electronic. Digital multimodal texts are videos, vlogs, and websites. Multimodality refers to the ability to understand and respond to such texts and to create them. The term of multimodal knowledge encompasses visualization and representation, where visualization implies various communication modes used in the multimodal text. This approach allows the creation of relevant and engaging content for teaching and enhanced learning (OUP, 2023).
Students also need to be taught to use AI tools without the fear of their thinking and creativity being diminished by the output generated by these tools. They also need to understand that the future is not about being replaced by AI teachers, chatbots, but that of multi-skilled teachers who can use AI for better teaching and learning, as Nick Peachey, Director of Educational Technology points out: “We aren’t facing a choice between human teachers or AI teachers. There is a third option and this is what I feel we need genuinely intelligent teachers who have the knowledge and ability to work with artificially intelligent software to develop emotionally and intellectually intelligent students (Peachey, 2023, pg.1).
In view of the above, we have searched and consulted papers and specialized sites in the use of AI for physical education and sports, to see other perspectives on the involvement of artificial intelligence in teacher training, teaching and learning.

## 2. USING AI IN TEACHING PE AND SPORTS

On searching for uses of AI in the field of sports, Google lists a variety of them: fan engagement, performance analysis, injury prevention, personalized training, match predictions, game analysis, predictive analysis.
On further search, there is the list of the *10 Best AI Tools for Lesson Planning in 2024*, on https://clickup.com/blog/ai-tools-for-lesson-planning/, which tops the following sites: XlickUp,

ChatGPT, LessonPlans.ai, Education Copilot, Learnt.ai, Teachology.ai, Auto Classmate. Jasper, PlanifAI, Curipod, - ConnectedPE on https://connectedpe.com/tools, (York, 2024).
At ConnectPE, a site of interest for this paper, we explored its possibilities, and have found that it provides software for lesson planning, plans which can be personalized, it has a user-friendly interface, which allows exploration and stimulates choice. Another site with complex and useful information in the field is on https://www.supportrealteachers.org/, supportREALteachers, which provides a large variety of topics related to teaching and the use of AI (supportREALteachers, 2023).
In *Applying Artificial Intelligence in Physical Education and Future perspectives*, authors Lee, H. S. and Lee, J. point out that the use of AI brings changes into the creation of content and teaching methods. The implication of educational technology in permanent evolution requires continuous research and enhances teaching and learning. Although there has been little research in the use of AI in teaching physical education and sports, there is the need to establish principles of use based on research and conceptualization (Lee, Lee, 2021).
The use of AI provides support for enhanced learning experience by differential, individualized and personalized physical education and sport teaching. Changes are focused on the teaching-learning process, measuring student performance and achievement. The use of virtual and augmented reality provides a new dimension to the field. Based upon such tools, learner evaluation and counseling are much improved (Lee, Lee, 2021).
The authors foresee a deviation from the present role of physical education and sport teachers in future, focusing on the role of expertise. Teaching and learning will involve other issues like "healthy life with sports, "the direction in which we should move with sports" (Lee, Lee, 2021). The role of teachers to help students learn and create physical activities on their own becomes very important (Lee, Lee, 2021).
Authors Killian, C. M., Martinnen, R., Jones, E. observe that students already rely heavily on AI, even if institution policies require submission of original work. Such reliance may leave students unprepared, as they tend to neglect the construction of solid, deep knowledge, especially in lesson planning, which involves critical thinking, creativity, and handling concepts from courses learnt. Therefore, they need to be taught responsibility in the use of AI-generated materials, methods of generation, evaluation, selection and responsible use of such materials ([Killian, C. M., Martinnen, R., Jones, E., M, 2023).
Using AI in teaching updates and enhances knowledge and understanding, as it brings new ways of organizing, presenting and communicating information, while acting as a timesaver for documentation and creating efficiency, enhancing teaching functions at a time. However, the responsible use of generated materials is necessary, not to shift entirely to machine-generated materials (Killian, C. M., Martinnen, R., Jones, E., M, 2023).
In her article *How Can AI Impact on a Subject like PE*, Emma Evans presents the changes occurring in teaching and learning physical education and sports from the responses of chatbots to the prompts on the subject. Thus, according to ChatGPT, there is the possibility to generate "a personalized fitness program tailored to student needs", "real-time feedback on form and technique, reduce injury risk and improve performance" (Evans, 2024), an enhanced learning experience by offering guidance, increase motivation, and improve instruction in realistic settings using virtual and augmented reality, gamifying physical activities, optimizing coaching, enhance performance analysis, and the use of wearable devices by students to track their own progress. AI tools also provide an enhanced performance analysis, which is important in physical education and sports (Evans, 2024).
Gemini's response to the prompts on the subject points out that physical education is more than physical training, and that it requires experiences that provide a holistic development. This includes health education, nutrition and injury prevention, development of motor skills, social interaction,

cognitive abilities, contributing to emotional well-being and forming a lifelong habit of physical activity and wellness (Evans, 2024).

As there are various tools used in the field, ChatGPT selects a number of physical education-specific tools for actual practice, such as Playsight, an AI-powered sport video analysis tool, analysis of movement during practice and games, Coach's Eye, a video analysis application, Zybek sports – testing systems to assess speed, agility and power, Sweat Worlds, a fitness techno platform that created personalized fitness plans and tracks progress. These applications are useful as they help increase effectiveness, optimize training programs, and provide personalized feedback (Evans, 2024).

In the material entitled *How AI Is Enhancing School PE* , Teachflow.ai observes that AI provides tools and techniques for a better experience, fitness trackers with a real-time feedback on activities, helps motivate students to achieve , tips on nutrition and recovery, personalized physical education programs, guidance on form, technique and performance optimization (Teachflow, 2023).

In his article *The Role of AI in School Physical Education and Sports Science,* published in the International Journal of Physical Education and Sports Science, 2020, author Utsav Chaware, points out that Ai is a revolutionary technology with which students need to be well acquainted, therefore the curriculum should be updated and integrated with AI and its associates {Chaware, 2020). The same idea generated J. Feith's paper on *Introduction to AI for Physical Education Teachers (Part One),* where he underlines the necessity to familiarize students with the necessary terminology and use of AI tools in their teaching of physical education and sports (Feith, 2024).

Taking into account that computer-aided instruction courses in physical education and sports include the teaching of several skills for the integration of such instruction and online teaching and learning, such as online platform use, multimedia integration, digital communication, assessment tools, digital content creation to provide a dynamic and effective online learning for students, we used the following question in the prompt to generate a ChatGPT response on specific skills needed by students who prepare to be physical education and sport teachers in order to involve AI tools in teaching and learning, as it follows:

**What skills should PE and sport teachers develop to involve AI tools in teaching and practice**?

**ChatGPT** - released for public use in November 2022, AI-powered large language model LLM, developed by OpenAI, San Francisco- based company (Killian et al., 2023)

Integrating AI tools into physical education (PE) and sport teaching can enhance the learning experience and provide valuable insights for both teachers and students. Here are some skills that PE and sport teachers should develop to effectively utilize AI tools.

**Understanding of AI basics**: Teachers should have a foundational understanding of artificial intelligence, including its capabilities, limitations, and potential applications in education and sports.

**Data literacy**: AI tools often rely on data analysis and interpretation. Teachers should develop skills in collecting, analyzing, and interpreting data related to physical activity, performance metrics, and student progress.

Technology **proficiency**: Familiarity with the technology platforms and software used for AI applications is essential. Teachers should be comfortable using AI tools such as motion sensors, wearable devices, video analysis software, and virtual reality systems.

**Curriculum integration**: Teachers should be able to integrate AI tools into existing PE and sport curricula effectively. This involves aligning AI-enhanced activities and assessments with learning objectives and standards.

**Personalized learning**: AI can facilitate personalized learning experiences by adapting content and feedback to individual student needs. Teachers should learn how to leverage AI tools to provide tailored instruction, feedback, and support to each student.

**Ethical considerations**: Understanding the ethical implications of AI in education is crucial. Teachers should be aware of privacy concerns, bias in AI algorithms, and the potential impact on student motivation and autonomy.

**Collaboration and communication**: Collaboration with AI developers, data analysts, and other educators is essential for successful implementation. Teachers should be able to communicate effectively with stakeholders and collaborate on the design and implementation of AI-enhanced teaching practices.
**Continuous learning**: AI technology is rapidly evolving, so teachers should stay updated on the latest advancements and best practices in AI integration in education and sports.
By developing these skills, PE and sport teachers can effectively harness the power of AI to enhance teaching and learning experiences, improve performance outcomes, and promote lifelong engagement in physical activity (ChatGPT – generated material).

## 3. CONCLUSIONS

From both research and practice, the AI tools enhance teaching and learning in the field of physical education and sports, with good and interesting results, provided there is a continuous documentation and update on the applications of various uses, on specialized sites for PE and sports, and research, in order to adhere to the directions taken by methodology and content creation. Upskilling for teachers in the use of AI tools and updating on the latest research become an essential condition in not lagging behind in the field of educational technology, in order to improve efficiency and practice a teaching of interest and motivation for students. The development of digital skills and the actual interaction and work with AI tools can bring about interesting ways to update materials, strategies, reflection, and research.
Attention should be granted to multimodality in teaching and learning, especially in the field of physical education and sports, where the communications modes are important to students, especially those related to image and video. These can highly increase understanding of content and demonstrate what they need to learn.
Multimodality should also be applied to learning, as students need to communicate in this manner, need to learn how to create and use multimodal materials in their teaching and practice.
It is also important to understand and teach students the responsible use of AI output: they must not rely only on machine generated materials, instead they should build up knowledge in order to be able to select the materials they use.
The involvement of chatbots and AI tools in documentation is a timesaver for teachers, helping them to create relevant and engaging course materials, update them continuously, and build up knowledge on the latest information available.
Using AI tools for assessment and analysis of results helps teachers to form a more detailed view on the results and impact of their teaching, draw conclusions and make adjustments in content, strategy, student motivation and engagement.
There is a variety of opinions nowadays on the replacement of teachers by AI teachers, with chatbots taking the place of teachers. However, we consider that artificial intelligence needs human operation and direction, and the solution is that of continuous upskilling and the development of understanding of what adaptability really is and what it actually takes.
Looking at the future of teaching and learning by AI tools in physical education and sports, we observe the possibility of a holistic training, where other elements like well-being, nutrition, sports for life tendencies become important, which can constitute a complete image of what education in this field will be able to provide by the use of artificial intelligence.

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# PEDAGOGICAL ASPECTS OF TEACHING LEVEL I ALPINE SKIING TECHNIQUE TO UNFAMILIAR STUDENTS

***Petru GRIGORAŞ, Lecturer PhD.***
*,,Bogdan Vodă" University of Cluj-Napoca, Faculty of Physical Education and Sport, Romania*
*email: grigoraspetru@gmail.com*

**ABSTRACT**
*Considering the optimal connection between the three domains of the CAP system (cognitive, affective, psychomotor) identified in Bloom's B. taxonomy, we agree that in the organization of the specific didactic activity of alpine skiing, this must be manifested accordingly. This aspect is determined especially by the specificity of learning, in which the motor skills are open, so they take place in ever-changing, varied conditions, related to environment and relief. The problem of motor learning in alpine skiing has been studied for a long from the point of view of motor gesture and specific technical interpretation and less from the point of view of the cognitive aspect of learning. Within the educational process in alpine skiing, motor learning, which represents the process of acquiring motor skills, is delimited by motor control, which focuses on understanding the control of the learned (trained) skill, respectively its performance process. The motor learning process in alpine skiing is the subject of numerous experimental studies and research, focused on the facilitation and efficiency of learning, depending on the various types of needs of contemporary society.*

**KEYWORDS:** *cognition, contextual interference, motor learning, pedagogy, random practice.*

**JEL CLASIFICATIONS:** Z20, Z28, Z29

## 1. INTRODUCTION

Previous experiences, and recent research in the field of sports pedagogy and psychology, made possible a detailed outline of the general framework for the manifestation of specific motor learning in alpine skiing. The obvious outline in the field of motor learning of some educational strategies that promote an active and interactive involvement of the protagonists of the learning process, as well as the influence of new methodological guidelines in the field of physical and sports education, led to a careful evaluation of the processes that determine the acquisition of specific skills and the way to control their performance. The central problem of our study was the identification of a didactic method of intervention for fast and efficient acquisition of basic motor skills in modern alpine skiing, in relation to the effort of motor learning and the engagement of the subjects in the process of learning. The objective of the study was aimed at the learning effort of unfamiliar students (beginners), an effort that involves the stimulation of complex physical and cognitive processes, depending on the intensity of the learning task, its degree of complexity on the one hand, and individual differences or level of motor skills and degree of motivation on the other hand.

Previous observational studies and analyses (within practical skiing courses) have revealed that the element that mostly influences the learning process in alpine skiing is generated by the effort of the subject engaged in the task, his activism and degree of involvement, but also the effective way of organization of the learning experience, providing feedback and specific motor transfer.
Thus, the coordinates that were the basis of the structuring of a specific motor learning model were represented by:

- designing and organizing an effective training intervention to facilitate the initial acquisition of the basic techniques in alpine skiing.
- ensuring the efficiency of learning and motor control through random practice.

The current paper aims to provide a theoretical explanation of the pedagogical approaches put into practice by us in the motor learning experiences organized with students of the Faculty of Physical Education and Sport (N = 103), unfamiliar with the practice of alpine skiing and who, we hope, will contribute to further research in the field.

## 2. MOTOR LEARNING IN ALPINE SKIING – PSYCHOMOTOR ASPECTS

### 2.1 Cognitive mechanisms involved in learning specific motor skills

Motor learning in alpine skiing requires the existence of two solidary but complementary aspects: the procedural aspect (which includes the processes that make up the learning sequence) and the motivational aspect (which indicates the degree of involvement of the student in the act of learning and solving tasks). Motivation, which together with attention constitutes learning conditions, is particularly important in any of the stages of motor learning (Ionescu, 2003). These two factors lay the foundations for the phenomenon of activation, of cognitive mobilization. For the beginner, if the arousal level is too high, skill performance will be low. Learning a motor skill, whether fundamental or specialized, is an active learning process closely related to cognition. All voluntary movements assume an element of cognition, but the more complex the motor task, the more complicated the cognitive process involved. During learning, cognitive maps or mental images are formed that are memorized and are ready for reuse. While the habit is consolidated, the performance tends towards automation (virtual) with a relatively small involvement of cognitive processes, respectively awareness.

Regarding this, the teacher must intervene to help students learn both the concepts of habit and movement associated with how the body must move or can move. The acquisition of specific motor skills in alpine skiing (combinations of simple and complex motor tasks) assumes the implications of the following factors: *attention*, *perception*, *thinking* (analysis, synthesis, generalization), and *memory*. The complexity of the skill influences its acquisition, because the more complex it is, the more difficult it is to learn, and the longer the learning time. The quality of perception depends on the degree of focused attention. *Perception*, as a process of identifying and integrating sensations, contains aspects that can be learned or at least developed through experiences (Hayes & Orrell, 2003). The sum of stimuli coming from tactile (apparatus, specific equipment), visual, auditory, and kinaesthetic, determines the formation of certain habits, adaptations to situations or tasks that contribute to the performance of the motor skill in optimal conditions, thus explaining how during motor learning the skiers get used to the ambient and climatic conditions. We can thus delimit two categories of sources of sensory information, namely *exteroceptive information*, coming especially through visual and auditory analysers, and *proprioceptive* or kinaesthetic information (Schmidt & Wrisberg, 2008). If we consider the fundamental characteristics of motor learning in alpine skiing, we can delimit the importance of these sources of information in the control of specific movement patterns. The skier, based on the visual analyser, defines the ambient structure, the movement of his body segments, and through hearing estimates the character of his action (the sound of skis on snow can give important clues about the control of the pressure on the edges or the sliding speed). In the practical activities of alpine skiing, in order to perceive complex motor actions, we call to their simplification, to the analytical approach.

However, recent research in the field of motor learning (Schmidt & Wrisberg, 2008) has demonstrated that it is much more useful and efficient to start learning from the global form of practice which implies a better action of the sensory-perceptive system and representation. This phase, characterized

by gross errors of performing or perception, is particularly important for introducing the analytical phase of the learning sequence.
Within the mechanisms of secondary processing of information, *thinking* is in the foreground. For this reason, in motor learning, new situations must always be created that constitute incentives for thinking (variation of tasks, movement parameters, type of slope or snow).
In alpine skiing motor learning, *memory* represents the fundamental psychic function that makes it possible to fix, preserve, recognize (update) and reproduce psychic phenomena, having a special role in processing the information resulting from the production of motor tasks. The mnemonic information processing model (Malim, 1999) is expressed through the development of three fundamental stages: fixation (input), storage (organization), and re-actualization (data recovery for use). According to Coker A. (2004), long-term memory has memory subsystems: episodic, semantic and procedural. This component of memory is considered to be the storage space for accumulated experiences (Schmidt, 2008), considering that the effective learning of a motor skill occurs when information is processed in short-term memory and transferred to long-term memory.
*Attention* is a sine-qua-non condition of the act of learning, which increases its efficiency and facilitates it. By definition, it consists of the selective orientation and concentration of mental cognitive activity on an object or phenomenon, the attentional focus having a significant influence on motor performance (Wulf, 2007). Attention ensures a good sensory and perceptive reception of stimuli, a deeper understanding, a more durable memorization, and the selection of appropriate skills and habits. The factors that favor the involuntary concentration of attention are particularly important, seen from the perspective of the teaching activity, because the teacher must know these factors as ways of capturing the students' attention. External factors are represented by: the novelty of objects, phenomena, situations, intensity of stimuli, contrast, movement, and change of stimuli. The attentional focus (Wulf, 2007) in the motor learning process determines the consistency of the performance of the skills so that the attentional resources that must be directed towards the planning and execution of the action diminish with the progress in different stages of learning.

**2.2 Processing information in alpine skiing motor learning**

The performance of motor skills in alpine skiing, whether they are simple or complex, requires the existence of an information processing process, the quality and speed of which varies in different stages of motor learning. These distinct operations are the basis of the simple or complex processing model. The use of this information processing model gives us the possibility of describing a complex motor action, such as performing a Cristiania (parallel turn) in alpine skiing. The student uses his senses to detect stimuli, in the *stage of stimulus identification* (visual sensations provide information about the type of slope and the terrain profile, or the quality of the snow), and through the *perceptual mechanism* (influenced by personal styles, motivation, and previous experience) he interprets the information received. Many of the specialists tend to underestimate the importance of perception, believing that those who are present in the same situation perceive the same things and that in general, these coincide with their perceptions. Initially, visual information is mainly used, but later this will be better supported by internal (proprioceptive) information.
When a movement is made, many sensations are perceived. It is about sensations relative to accelerations and decelerations, the force produced, variations in the angles in the joints, and dynamic balance. The information provided helps to make an *execution decision*, in the *response selection stage* (execution of a cristiania by absorption, because the terrain profile requires this), a partially conscious phenomenon in order not to delay the decision and the execution. The effector mechanism organizes the information (the *response programming stage*) and sends messages through the nerve endings, to the muscles interested in the execution of the movement (the messages are sent to the muscles with a role in ensuring active flexion (the process is even more complex because both a dynamic balance and an anticipation for the following actions under different conditions are made).

*The output* is represented by the complex motor action produced (the result of the action of the three stages of processing): the Cristiania by active absorption. As for the feedback, the internal one provides information on the *sense* of the movement during its performance and the external one is important because it provides information on the performance of the motor skill.

**2.3 Motor control**

While motor learning deals with the study of the acquisition process of motor skills, *motor control* is a distinct process aimed at the execution, the performance of the skill, in the sense of its control (Schmidt & Lee, 2005). Once the subject decides to perform a motor action, specialized parts of the brain must decide how to control the muscles involved in the execution of the movement. Based on this consideration, the study of motor control *must include the study of the cognitive processes involved* (attention, motivation, emotional aspects) *about perception and action* (Cook & Woollacott, 2007, p. 5), through the prism of a cooperative effort of the cerebral structures. The control of motor action is substantiated through the prism of the theory based on the concept of a generalized motor program, which is considered to contain rules for creating spatial and temporal patterns of muscle activity (Schmidt & Lee, 2005). This control (Figure 1) is an open-loop control. Feedback is present but not used in motion control.


**Figure 1. Open circuit model of motor control.**
*Source:* adapted from Davids, K., Button C., Bennett S., (2008)

The theory of Schmidt R. (1975), also known as the *schema theory*, presents the idea that starting from a generalized motor program, motor response schemes are elaborated that particularize the motor program manifested to a concrete movement with specific consequences and results. According to this theory, when learning a new motor program, one learns a generalized set of rules that can be applied in various contexts. Central to this theory is the concept of a schema, an abstract representation stored in memory. A schema represents a set of rules on the execution of an action about the feedback received during (concurrent) and after the performance of the motor task (terminal). Schmidt R.'s scheme is based on the theory that when a motor action is performed, four types of information are gathered, and directed to the short-term memory:
- *the initial conditions of the action* – the starting point, the position of the body or body segments
- *certain aspects of the motor action* (parameters used) - how wide? how fast?
- *the result of the action* (effect) – success or failure
- *the sensory consequences* of the action.

This information is stored in short-term memory as long as it can be abstracted into two schemas. The relationships between this information are used for the construction of a *recall schema* (applicable in new action conditions) on a motor level in the production of movement and a *recognition schema* on a sensory level, in the assessment of the accuracy of selected movements. Each new motor action brings new data into the system that determines a refinement of the set of rules used.

**2.4 Feedback in the motor learning of the basic technique - practical implications**

In the initial phase of learning, the student benefits from imprecise information about how to perform a motor task, focusing his attention on the aspects that make the transition to the environment or actions with which he is not familiar. The beginner skier will make a considerable effort to maintain dynamic balance and avoid falls. At this moment, he does not benefit from information to help him control his movement, and even through the observation of a technical model he cannot correctly interpret what exactly he must visualize, or on which actions he must focus his attention. The intervention of the teaching staff in the direction of developing the ability to analyse and control motor actions is obvious and necessary, to facilitate the perceptual mechanism. All this information that the teacher receives from the student in response to the required topic, is vital for structuring the learning experience. An important aspect is generated by the type of information provided, which generally boils down to the corrective aspect, so it has a negative characteristic, in the sense that it signals the presence of an error produced during execution. Quite rarely, feedback is provided to confirm the correctness of a motor action, to motivate the action. Another problem that influences the *learning effort* refers to the amount of information that the teacher provides to a student, especially to the one in the first phase of learning.

The possibilities of analysing and understanding a large amount of information are limited, it develops along with the motor evolution of the individual, a fact that must lead the teacher to ensure learning experiences that facilitate motor acquisition and communication. In this sense, there are two fundamental rules for ensuring feedback in the learning activity:

- the feedback provided by the teacher must be complementary to the information the student receives through the sensory (autonomous) mechanism
- the feedback must always provide relevant and usable information

The teacher's communication skills are decisive, knowing how to communicate is much more important than knowing the technique, especially if the type of students they come into contact with is diversified. Non-verbal communication is particularly important in the field of motor learning in alpine skiing, its forms manifesting in: looks (direction, frequency, intensity), gestures, facial expression, posture, voice tone and rhythm, pauses in communication, help given in making movements, managing space (approach/distance). A representative consideration is given to the type of message, because the levels of communication can be multiple, and messages intended for two different reception channels can contradict each other. Feedback, as a source of information frequently used during the motor learning process, includes various forms that refer to verbal, visual, or kinaesthetic information. Supporting performance through feedback, reward, and encouragement (Crane, 2004) can stimulate the learning effort. This type of information related to movement is classified into *intrinsic* and *extrinsic* information, or additional information (Grigoras, 2013).

### 2.4.1 Premises of proprioceptive and exteroceptive feedback in motor learning experiences

*Intrinsic feedback* represents *the sensory information provided when a movement occurs* (Schmidt, 2008, p. 285), which can be integrated through external (exteroceptive) or internal (proprioceptive) sources. The information that a student engaged in a motor learning sequence obtains is decisive for being able to find out what he needs to obtain, how to obtain that thing, and modelling the motor program used. Information can be received previously (feedbefore – anticipatory control where sensory information is used to a minimum) during or as a result of the action (intrinsic and extrinsic feedback). Intrinsic feedback is obtained by the student as a result of the learning task. For example, in the preparation of a sliding action on skis, the student receives internal feedback regarding the position of the skis and the lower limbs, as well as the position of the body in sliding. Danielson R. R., (2004) defines intrinsic feedback as the type of feedback that does not involve external help and is based on *exteroceptivity* (information from outside the body) and *proprioceptivity* (information from inside the body). We can thus delimit the *exteroceptive feedback* as the result of the movement, provided through the sense organs, the observation of the result by the student, observations by the

teacher, and observations using technical means, so a predominantly visual character. As for *proprioceptive feedback*, it provides information from proprioceptors in muscles and tendons that provide details about the sense of movement, students use this type of feedback to make fine corrections to performance (this is what in alpine skiing we call piloting action).
*Extrinsic or additional feedback* represents *the information received from external sources that supplement the student's sensory information* (Coker, 2004, p. 215) and is generated by the verbal means provided by the teacher or by using mechanical devices or additional means which ensures the efficiency of learning. In this way, the intrinsic feedback that regulates the motor actions of a skier can be supplemented by the external feedback, through verbal information provided by the teacher in terms of the positioning of the body or its segments in dynamic balance. Through additional feedback, necessary information is provided in learning situations where consolidating or improving motor skills is difficult or impossible to achieve. Recent studies have demonstrated a negative impact on learning in the case of providing additional instant feedback, hindering the development of error detection and correction mechanisms and the evaluation of intrinsic feedback.

## 3. PREPARING AND STRUCTURING MOTOR LEARNING EXPERIENCES

The learning experience can be defined as the deliberate attempt to improve performance (Danielson, 2004), a situation in which individuals can perform both individually and within the collective activity (Schmidt & Wrisberg, 2008), a component that refers to the personalized way of internalizing the learning situation, objectified in changes in cognitive, affective or psychomotor structures (Bocoş, 2008). Within the learning experience, a significant role is played by abilities, considered as genetically founded tendencies that are the basis of learning, abilities, which are benchmarks in the development of performance, and the degree of motor learning understood as an internal change resulting from the practice of a motor task. The learning experience in alpine skiing has a dominant characteristic, generated by the specific climate in which the activity takes place. To be able to respond optimally to the learning tasks, the student must be aware of the objectives of the activity (process or performance), the goals and themes of the lesson, the specific way of carrying out the activity, and the educational climate. The teacher's communicative qualities are decisive in establishing and supporting an activity that corresponds to the specific requirements and needs of the subjects he works with. Active learning is not synonymous with overcrowding the student with activities, it should be understood more as an intensification of the teacher's work to offer them learning opportunities, teaching is the activity through which the teaching staff creates favorable conditions for the emergence of learning.
In the preparation and structuring of learning experiences, the following aspects play a decisive role:

1. *Student familiarization and communication.* This aspect of the learning process is a basic condition in the activity carried out on snow because the working conditions and the specific equipment can have a decisive role in terms of the student's availability for learning. The mode of communication chosen by the teaching staff has implications on the way of perception of the students and their performance in the practical activities. Familiarization with the instructive-educational process involves the communication of what is expected because the fear of failure is a negative factor in learning progress.
2. *Direction of attention*. It considers how the attentional focus is directed within the component: internal (body movements), external (environmental factors, spatiotemporal landmarks), limited (a movement, a part of the body), or expanded (several movements, body segments), as well as the change of attention during a movement (ambient focus – analysis of the conditions for the execution of the movement, the decision regarding the type of movement chosen, focus on the image of the movement).

3. *Optimization of the activation level*. A particular problem in the first stages of learning is caused by the way performance evaluation generates anxiety (Wrisberg, 2008). The solutions to this problem are given by emphasizing the process objectives and not the performance ones. In other words, the teacher must be more interested in the quality of the activity than in its product and must help the students in establishing real objectives that can be fulfilled.
4. *Creating alternating moments between effort and rest.* A considerable difference is given by the choice of work strategy. In planning the practical activities with the students from the specialized faculties, both the number of days of the training course, as well as the duration of the practical work and the duration of the breaks between them, will be taken into account. In this sense, it is considered that the type of distributive, short activity (*distributed practice*) is more effective than the long, continuous activity (*massed practice*).

**3.1 Forms of organizing the practical activity with unfamiliar students**

Within the motor learning process of skiing, two effective ways of organizing the activity are distinguished from the point of view of the practical context: *constant practice* and *variable practice*. Also, from the point of view of the structure of the motor task, *analytical practice*, and *global practice* are distinguished. The way of organizing and structuring the practical activity in the case of complex motor skills, i.e. of a large number of actions within a lesson, is considered to be particularly important in the learning process. These variants of practice organization are known as *block practice* (grouped) and *random practice* (Grigoras, 2013).

The form of analytical practice is defined by Davids et al., (2008) as part-task training. The analytical or global approach largely depends on the nature of the motor task, and its degree of complexity. Complex motor addictions may require their segmentation for better awareness of the component elements, after which it is possible to proceed to the global performance of the motor task. Depending on the variability of the practical context, variable practice, and constant practice are distinguished. *Variable practice* involves performing versions of the motor skill. In other words, it is not enough to perform a motor task in stable conditions, because the open-type skills in alpine skiing require variations (of sliding speed, trajectory, and distance) depending on the slope, snow, and relief of the slope. These variations include variations in the physical conditions and performance situations of motor skills, actions which, ironically, initially lead to errors in the performance of motor tasks (Magill, 2007). We can exemplify these types of practice within the instructional process specific to alpine skiing as follows: constant practice has a single, uniform version of the skill (task A), while variable practice involves the performance of variations of the skill (A1, A2, A3). In the practical activities specific to the discipline of skiing in higher professional education, unfortunately, a relatively uniform organization of the practice sessions is observed, overlooking the objective of the discipline, that of acquiring through learning possible variations of the skills specific to alpine skiing. *The practice in blocks of motor tasks* delimits the way to practice several skills within a practice session, by passing successively through all the stages of the formation of specific motor skills within a motor task, after which it moves on to the repeated execution of the next task. In our case, this type of practice delimits, for example, the repeated practice of the braked plough (task A) until the level of automation, then of the sliding plough (task B), after which we move on to snowplough turn (task C). Most of the time, the practical activity within the skiing courses with beginner students is organized in this form, faithfully following the methodical sequence of the technical procedures within the method of learning the technique. This way of organizing most of the time generates some monotony in the activity through continuous repetition but ensures performance with constant indices within the practice sessions.

Another form of practice common to the learning of several motor skills in one learning session is *random practice*, which involves a planned mixing of motor tasks, thus ensuring their non-consecutive performance. Random practice of motor tasks may slow the initial acquisition of the skill,

but it will be more effective for long-term retention (Lee & Schmidt, 2005). Exemplifying this type of practice in alpine skiing, motor tasks can be performed according to the model: BAC, CBA, ACB. According to the *forgetting hypothesis*, when students switch from task A to task B during practice, they forget some aspects of how to perform task A while thinking about how task B should be performed. Returning to task A later in the same practice sessions is done by regenerating its performance plan. This hypothesis is also known as the *action-planning-reconstruction hypothesis*. In any of the work variants, the determination of interest in learning, the awareness of learning for the formation of one's own style, and the activation of the individual element will be pursued, knowing that one's own activity is the basic link in the motor learning process. In general, due to the short time available, and the impossibility of creating an own teaching space, and individual strategies, the teacher (or team of teachers) resorts to a frontal activity that ensures a better visualization of individual interpretations and easier communication. Contemporary practice demonstrates the fact that for an effective, activating, and motivating activity, it is necessary to resort to various forms of group organization depending on the lesson's themes, objectives, characteristics, and working conditions.

**3.2 Particularities of active learning in motor learning experiences**

Learning or consolidation lessons intended for beginning students will benefit from particular attention for the purpose of familiarization and activation. In choosing the means, a decisive role is played by the *creation of the problems* that the student must solve. Some specialists (Dillon cited by Oprea, 2003) are of the opinion that finding the problem (problem finding) and not solving it (problem-solving) is more important. Thus, in the motor learning process of skiing technique, the main objective is to influence the *decision-making* and *control mechanisms*, in order to identify technical errors and causes that determine their appearance. Later, with technical consolidation, self-control becomes evident, fine correction manifesting itself at a higher level. For this to happen, however, it is mandatory to develop didactic strategies through which problems are constantly exposed (the form of practical exercise, the form of control) and implicit adaptations of the motor program to solve them correctly. In this way, problem exercises will be used, in the solution of which the student's contribution will be as large as possible. Alpine skiing does not represent a cyclical behavior, the variety of situations and conditions to which the student is subjected generate unlimited problems, the solution of which must be done at the moment.

The collective lessons represent the common form of organizing motor learning experiences within the practical skiing internship in the specialized faculties, characterized by a didactic strategy different from that of individual lessons, given the particularities and size of the group being worked with, the space on slope, way of communication, etc. The main problems are the variety of students' characteristics (in terms of attention and motor interpretation) and the fact that they ski less and listen more. In this case, a particularly important factor is the judicious organization of time and workspace, by choosing the most appropriate exercises and routes. In this educational climate, cooperative learning is evident, as the tasks are proposed to the entire group of students, thus achieving a positive interdependence between group members, individual and group responsibility, constructive interaction, social skills necessary in interpersonal relationships, and self-evaluation.

If until now the student passively attended the classes and received the knowledge from the teacher, contemporary studies demonstrate the fact that the quality of the act of teaching and learning is improved when the students have ample opportunities to clarify, question, apply, and consolidate the new knowledge. In this case, the teacher creates a specific working atmosphere, through which the students assimilate the material to be learned (specific motor skills and their acquisition method), being the only one who guides them and helps them understand and apply the information. The student and his knowledge needs are the central points of active learning, there are many strategies through which he is actively engaged in the learning process, including group discussions, problem-

solving, case studies, role play, and activities whose benefits are found in improving critical thinking skills, strengthening the transfer of new information, or increasing the degree of motivation. The use of active learning techniques does not imply giving up the classic forms of training, but structuring them according to the particularities of the group, the time available for learning, and the working conditions.

**3.2.1 The motivation for learning - from interest to involvement**

Motivation influences the student's degree of receptivity to the learning task, representing *the set of factors that trigger, energetically support, and direct the learning activity* (Bocoș & Jucan, 2007, p. 38). Studies in the field of motor learning (Coker, 2004; Schmidt, 2005) have demonstrated that subjects who are motivated will explore, practice, and use thinking processes more effectively, having a strong desire to perfect the specific motor skill. For this purpose, the teacher must recognize the subjects motivated to learn, those with prejudices, or those who are not aware of the relevance of the action to be learned. For this reason, the introduction of a new skill or motor task must capture the student's interest, and simply explaining the objective is usually not enough. Those involved in the learning process must be aware of the reason why learning that skill is important, which can represent the development of a base on which to build subsequent skills.

Creating a positive, stimulating, but realistic learning climate is a way of increasing success in skiing lessons, increasing motivation, and eliminating stereotyped, boring, routine moments. The factors that influence learning possibilities and rhythms are not only represented by physical characteristics, motivation, or intellectual maturity but also by other characteristics that differentiate subjects from each other. Some individuals seem to acquire the movement only if they are subjected to a large number of tests and repetitions, while others, observe their colleagues very carefully and try to solve the tasks on their own.

**3.3 The transfer of motor skills in the practice of alpine skiing**

In the case of the absolute beginner, the ineffective skill that generates mistakes in the execution or interpretation of a motor task derives from the inability to correctly adapt the motor program to the specific situations within the activity. On the other hand, there are situations in which students manage to have satisfactory motor performances from the first attempts, due to the fact that the programs used to solve a previous task have common aspects with those of the current task and are adapted to these new circumstances. This phenomenon of skill transfer is of particular importance for the design of the practical activity within skiing courses, in order to detect early the elements that negatively influence a certain motor skill, and also to optimize the way in which the transition from a certain motor task to another, based on previous experience. Initially, this adaptation is imprecise, with mistakes and hesitations, but with time it tends to become precise and efficient. This means that an individual who has complex motor experiences, that is, who has successfully practiced different sports or practical activities, may be favored in the faster acquisition of a new motor action (skills), or, his performance may be negatively influenced due to an incorrect adaptation of the engine program. In the practical activities specific to skiing courses, the context of learning differs just as the context of the application of motor experience differs. The motor actions specific to the alpine skiing technique follow each other thanks to previously memorized motor programs, based on which the precision and adaptation to new environmental situations, but also of a technical nature, are successively finished during the executions, the discovery of mistakes, the intuition and the observation of the technical model. The sum of these experiences accumulated over time influences the ability to learn new skills. The explanation of the transfer phenomenon starts from the premise of using the principles, concepts, or skills learned in a certain context, in a new context in which they are applicable. Depending on the effects they generate on the motor tasks in alpine skiing or on any

act of learning, positive transfer or facilitation and negative transfer or interference (inhibition) are defined.
If we refer to the alpine skiing discipline, the previous motor experience related to the sliding plough process will facilitate or accelerate the way of learning the braking plough sliding process. The positive transfer represents a desideratum of the instructive-educational process, based on the idea that the acquired will be easily applied in similar situations. Negative transfer is determined by motor actions or habits that negatively influence, disruptively, a subsequent habit. The negative transfer in skiing can be manifested in the case of an influence of the skill specific to freestyle swimming, which involves a rotation of the trunk around the longitudinal axis, an element that is detrimental to learning the skiing technique. In this case, we are talking about inter-task transfer, which manifests itself when the skill from one sporting activity is transferred to the practice of another sporting activity. Another situation in which the transfer can manifest is the intra-task transfer, which takes place within the same sports activity (the influence of the skidding action in the case of the driving phase of parallel bypasses). A negative influence in learning a motor task is also manifested if the perceptual elements (the stimulus for the practical action) are identical, but the subject's reaction may be different. In the case of learning several technical procedures, the student will be put in a position to perform a certain procedure depending on the immediate requirements. The efficiency of the action is given by the type of procedure that dominates as intention or motor montage. We, therefore, consider it appropriate to identify the effects that the randomized practice of motor tasks manifests by creating obvious contextual interference. To facilitate understanding, the teacher can use analogies and comparisons between various motor actions in the didactic process. This is particularly useful in the skiing lesson when students are found to have some motor experience and can distinguish between particular aspects of movements and analogies of similarity.
Within the motor learning experiences specific to alpine skiing, it must be taken into account that the transfer is beneficial to students in the beginner stage, to a greater extent than to intermediate or advanced ones.

## 4. TEACHING STRATEGIES WITH IMPROVING POTENTIAL IN THE PROCESS OF LEARNING THE BASIC TECHNIQUE OF ALPINE SKIING (LEVEL I) BY UNFAMILIAR STUDENTS

The previous didactic activity highlighted the fact that a revision and adaptation of the model of the basic technique of alpine skiing is urgently needed, in order to correspond to the current requirements of specific practice, but especially of the didactic strategy for the efficiency of motor learning. These aspects determined the development of didactic strategies to improve the practical activity within the alpine skiing courses with FEFS students and optimization of specific motor learning, which refers to the use of random practice and feedback.
We believe that didactic strategies that involve varied motor experiences, group interaction, activation, and varied feedback, have ameliorative potential in the motor learning process of the basic technique with unfamiliar students.

### 4.1 Random practice – the contextual interference effect

The quality of specific practice sessions leaves its mark on the quality and efficiency of motor learning. If we consider the practical skiing course in higher professional education, we can say that the time required for specific motor learning is relatively short. Our main objective is to organize a practical course that reflects the methodical system of learning the basic technique in alpine skiing, as a whole, through which the student will be able to perform tasks in various conditions, in a relatively short period of time in a short, at the same time ensuring the basis of specific later skills. When a ski course does not meet these conditions, then it is possible that the activity is ineffective

and the basic objective cannot be met. So, the purpose of the didactic activity specific to the discipline of skiing in higher education is not the performance at the mastery level of the skiing technique, but the knowledge of the basic aspects of all the technical procedures within the basic technique, their motor learning in stable conditions in order to be able to consolidate and perfect later, in order to use this knowledge in the organization of specific, subsequent motor learning experiences. Studies in the field of motor learning in alpine skiing in our country broadly describe only two variants of the practice method, from the point of view of the structure of the skill, namely analytical practice (breakdown of the technical skill) and global, intuitive practice (Teodorescu V., 2000).

We believe that one of the effective forms of organizing the practice activity in the skiing course with the students of the specialized faculties can be represented by random practice. This form of organizing the practice activity for learning multiple motor skills, as described by Schmidt and Wrisberg (2008), involves the performance of distinct motor tasks in a randomized sequence, avoiding the consecutive repetition of a task (in our case technical skill or technical exercise). In contrast, the practice in blocks of motor tasks, which Dragnea and Bota (1999) call group practice, involves the performance of a single motor task repeatedly, a form of practice that is found in most cases in order to automate the skill, after which the performance of another motor task is carried out. The question that derives from this is the following: *what is more important for a future training student, to perform a snowplough at the automation level or to perform a descent along the entire length of the ski slope by adopting various technical bypass skills, in variable conditions in terms of the consistency of his actions?*

The significant difference between the form of organization of practice sessions by randomization, compared to the modality of practicing in blocks of motor tasks, is the variable nature of motor performance. This variable character of the practice refers to the mix of technical tasks within the basic technique of alpine skiing, a mix that implies a design of the practice depending on the type of slope on which the activity is carried out, the themes and objectives of the practice sessions and the characteristics of the group. This pedagogical approach ensures the increase of motor density in practical sessions, by ensuring the conditions of majority sliding, in varied contexts. The variable nature of the motor performance during the alpine skiing practice sessions determines a particular mode of interference that can facilitate learning. This *contextual interference* is manifested by switching from performing one motor task to another or changing the performance context. In alpine skiing, the use of random practice involves variable practice, due to the open nature of specific motor skills. A hypothesis underlying the contextual interference effect was proposed by Lee and Magill cited by Coker (2022) and is known as the *forgetting hypothesis*. According to this hypothesis, the transition during the practice session from task A to task B produces a temporary forgetting of some aspects common to the first task due to the involvement in solving the second one. Returning to task A promotes the regeneration of the action plan, which causes the initial performance to be relatively low. Random practice thus becomes a much more rigorous way of performing motor tasks, from the point of view of the cognitive mechanisms involved in motor learning, compared to the grouped form that involves the application of a constant plan of action, which determines a relatively good but false initial performance from the point of view of generalization. For this purpose, we consider that learning must promote a constant cognitive effort, which involves the continuous generation of new action plans in order to perform various specific motor tasks, in various contexts, so an activation through variable practical action, induced effects of the exercise in randomized form. This process of selection and programming of the response based on the different parameters of the motor tasks involves *learning difficulties* that are the basis of the motor learning specific to alpine skiing.

One of the most important characteristics of random practice is that of facilitating transfer and long-term learning. In contrast to the traditional practice in the ski courses through which immediate performances are obtained that can only be used for evaluations within the discipline, we believe that random practice creates the premises for the construction of motor programs that can be used in the

long term. The planning of a random practice session takes into account several elements that concern: the stage of specific motor learning, the size and characteristics of the group, and the characteristics of the practical activity area (slope angle, slope profile, and snow characteristics). From the point of view of the learning stage, the intervention through repetition in blocks, within the verbal-cognitive stage, is considered appropriate. This is based on the fact that those in a new learning situation with which they are not familiar, need repeated performances of a motor task in order to produce a plan of action. In contrast to learning experiences in blocks of motor tasks, random practice does not ensure immediate success and most of the time involves many execution errors (errors that actually form the basis of learning). This explains the non-use of this type of practice by many specialists in the field. On the other hand, planning a randomized activity can decrease the motivational level of the learners (if it is not supported by effective feedback), for this reason, it is particularly important to make them aware of the beneficial effects of the activity and the possibility of successful performance in variable contexts. In this direction, the activation of education subjects and the creation of an optimal learning climate are mandatory. The workspace is a determining element in the organization of a random practice session, through its basic characteristics: width, slope angle, differences in level, and relief, ensuring the development of the activity according to these characteristics. Considering the fact that most ski courses are organized on easy to medium slope sections in terms of difficulty, what we call the school slope, in the initial phase there are no major problems in organizing the practice sessions. If in the activity with students of small school age, it is appropriate to initially use forms of practice in blocks or series of repetitions, the activity with students can be oriented towards a simple initial randomization, which avoids the monotony and routine of practicing some initial actions with a low degree of difficulty. In this sense, we mainly rely on existing motor skills and previous motor experience, which can facilitate random performance of tasks within a practice session. On the other hand, the specifics of learning in alpine skiing require a variability of technical executions due to the learning context, in order to make maximum use of the working space and the time available. As we have shown, the progression and sequence of motor actions within the form of random practice go from simple to complex, from simple randomization, in which two or more technical tasks can be found during a practical sequence, to a complex randomization, which assumes that within a practical sequence, a technical task should not be performed twice or at least not in the same practical context. Depending on the sequence of motor actions and the implications that derive within the executive mechanism of information processing in motor performance, we can delimit two forms of the random type of organization of practical activity on the ski slope: *simple randomization* (performance of non-consecutive motor tasks with the possibility of repetition of a task within the same practical sequence) and *complex randomization* (the same motor task is not performed twice within a practical sequence). Let's assume that in a specific practical session, our objective is to learn three different technical procedures, which must be performed ten times to ensure the creation of an action plan and the development of an adequate motor program. These technical procedures can be represented, for example, by snowplough turn, vertical balance cristiania, and lateral skidding (which we note with A, B, and C), technical skills different in structure and trigger mechanism, therefore involving different motor programs. Within a learning session, these procedures can have different versions of execution from the point of view of the turn approach, travel speed, amplitude, slope angle snow type (variations we note A1, A2, A3; B1, B2, B3; C1, C2, C3). The specificity of the discipline and motor learning in alpine skiing determines a combination, a permanent mix of randomization forms, for this reason, it becomes particularly important to understand the way in which motor actions are performed, the differences between their parameters, and between the practical contexts in which they can be performed. These variations of the technical tasks (Table 1) reflect the movement parameters related to the turn radius (short radius, medium radius, long radius), the type of slope (semi-flat, medium slope, steep slope), the type of snow on which the task is performed motor, as well as the degree of manifestation of the speed and strength indices.

| | |
|---|---|
| Practice session in random form | $B_1A_2C_3$, $A_1C_2B_3$, $C_1B_2A_3$, $A_1B_2C_1$, $B_1C_3A_2$, $A_3C_1B_3$, $C_1A_3B_3$, $A_1C_2B_2$, $C_1B_2A_2$, $B_1A_2C_2$. |

**Table 1. Variation of the sequence of motor tasks in a practical session**
*Source:* Grigoras (2013)

Without performance in varied contexts of varied motor tasks, motor learning specific to alpine skiing will not be complete. From this point of view, random practice in varied contexts by using the practical part as a whole, can solve two big problems: the first is represented by the difficulty of delimiting a school slope, and the second by the inefficiency generated by working in constant contexts on the transfer in learning. In other words, in order to facilitate the transfer of skills, it is indispensable to ensure the conditions for practicing the skill being learned in situations similar to the target context. This is possible in motor learning specific to alpine skiing by delimiting a randomized form of practice with a variable character, which involves working on the entire length of the slope, without putting into question either the safety or the organizational nature of the ski lesson.

**4.2 Structural model of the basic technique (graduation of technical skills)**
The methodical progression within the basic technique of alpine skiing is carried out on the basis of general and specific pedagogical principles, training courses for motor skills, and the particularities of the discipline. This gradualization of the technical skills actually reveals the construction of an efficient model of learning the basic technique. We are of the opinion that such a model must be structured respecting a methodical gradualism in the progression of the learning process, starting with the *entry-level* (initiation phase – the first contact with alpine skiing) and then going systematically through the other specific phases, respectively: *the basic acquisition* (beginner level), *consolidation* (intermediate level) and *improvement* (advanced level). From the point of view of the content, the basic technique of alpine skiing must meet the requirements of practicing the discipline on the one hand, understanding the implications generated by the technological evolution in the field, the current needs of the recipients of the learning process, the significant changes in the competitive technique which involves changes in the fundamental technique, but also the traditional guidelines on the other hand. Through the lens of these considerations, we believe that an effective system for learning the basic technique of alpine skiing must be simple in structure and relevant in content. The methodical progression within the basic technique of alpine skiing is carried out on the basis of general and specific pedagogical principles, training courses for motor skills, and the particularities of the discipline. *Technical level I* represents the *beginner* level, in which the content reflects the tools necessary for the basic purchase. Due to the fact that this level is the entry-level, the first aspect is related to familiarization and knowledge of the specific equipment. Within this first level, within class A, the fundamental elements of the school slope (global initiation) are identified, as well as the fundamental positions and the initial elements of sliding on snow (basic acquisition). Class B corresponds to the initiation of bypass skills and the technique of using mechanical means of climbing. The beginner level contains a number of 15 technical skills, as well as specific fundamental movements (fundamental positions and actions), the sequence of which is a gradual one depending on their complexity and is given by the specifics of motor learning in alpine skiing. The *global initiation phase*, or the entry-level, represents the learner's first contact with alpine skiing, with the environment and the specific equipment, as well as with the basic concepts. We consider this stage of initiation a defining one for the subsequent motor evolution because this first contact creates various psychological dynamics through which the instinct of conservation and safety are put in the

foreground. Considering the input characteristics of the students, it is indicated that this stage takes place in a pleasant and safe environment. In this stage, the knowledge of the group and the establishment of communication relationships take place, developing trust and showing interest in the activity. Once the students are familiar with the equipment and the environment, it is much easier to propose activities that aim to identify the fundamental movements in alpine skiing (static balance and dynamic balance). The gradualization of the technical skills of sliding, braking, and tourning determines the creation of the premises for the acquisition of fundamental skills, the basic objective of technical level I.

## 5. CONCLUSIONS

The present work aimed to highlight particular aspects of motor learning specific to the discipline of alpine skiing, within the practical activities specific to higher education, based on the organization of stimulating and varied learning experiences, according to a coherent methodical system, in order to improve the learning process and strengthening basic motor skills, specific to contemporary alpine skiing. Our previous observations have demonstrated the fact that there is an urgent need to research these issues and develop some operating systems that correspond to the diversified requirements of students, based on individual characteristics, learning styles, and motivation. As a practice method, the random practice aimed to problematize specific motor learning and activate the students, along with maximizing the motor density within the practical sessions. The multitude of randomization variants within a learning session must therefore correspond to a previous planning based on the criteria listed above, the performance sequence of the motor tasks depending mainly on these elements, considering that the form of variable practice must be implicit, to make transfer and generalization more efficient. The method of random practice thus becomes a modern variant of the method of learning motor skills through repetition, thanks to its active character, able to trigger effective engagement in the activity, to stimulate the motivation and fundamental cognitive processes of the students. In alpine skiing, the motor learning of the basic technique is not fully deepened until the practical action takes place through individual or collective active involvement, exchange of ideas, analysis, reflection, discovery, and problem-solving, so interrelational cognitive and motor learning. Considering the fact that contemporary alpine skiing no longer corresponds as an organizational system, technical interpretation, and means of action to traditional skiing, a reconsideration of the aspects related to the learning methodology, the distribution and orientation of the effort in the learning activity, as well as the graduality of learning, aspects of general interest through the prism of educational reform in the field. However, we consider it necessary to delimit the way in which the random practice of skills specific to alpine skiing influences the motor learning of students, especially those of young and middle school age. In this perspective, we consider that the study carried out by us opens new horizons in the direction of practical methods of action, further research in this sense being decisive. The cognitive processes involved in the motor learning of the skiing technique are proving to be more and more important. The methods of influencing and developing these processes lead to the reconsideration of some didactic strategies, in order to ensure deep, consolidated learning. In this way, what is learned is well retained and helps to transfer or adapt to different situations encountered in the post-training educational process, in which students will demonstrate their skills.

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# TRANSNATIONAL PER DIEM, COMPONENT OF THE SALARY OF TRANSNATIONALLY POSTED EMPLOYEES

***Corina BANDICIU-BENE, Lecturer Ph.D.,***
*"Bogdan –Vodă" University of Cluj-Napoca, Faculty of Economic Sciences, Cluj Napoca, România*
*email:corinabene@yahoo.com*

**ABSTRACT**
*Among the various forms of work performed by employees, transnational secondment stands out. This refers to the situation where an economic entity based in one member state sends employees, with whom it already has employment relationships, to the territory of another member state for the duration of their provision of transnational services.*
*To compensate for the activities performed by these seconded employees, the employer will grant them a transnational per diem.*
*This paper covers both accounting and fiscal aspects related to the transnational per diem, which is a component of the remuneration for transnationally seconded employees.*

**KEYWORDS:** *Secondment, Per diem, transnational, allowance.*

**JEL CLASIFICATIONS:** G10, G13, G19

## 1. INTRODUCTION

There are situations where individuals seek to obtain a higher remuneration than they would if they carried out their activities within the national territory. In such cases, they may choose to earn their salaries by working in other countries, even though they are employed under an individual employment contract in Romania. They have this possibility if they are employees of a Romanian economic entity that conducts economic activities in other European Union countries; they can be seconded for a certain period to those countries to work there. Thus, transnational secondment stands out among the various forms of work performed by employees.

Transnational secondment is the process by which a company temporarily sends employees to another country within the European Union to carry out activities in that country. This practice is governed by a series of legal obligations for the economic entity conducting the secondment, intended to ensure the rights and protection of employees in the host country.

Transnational secondment is regulated by the provisions of Directive 96/71/EC of the European Parliament and the Council of 16 December 1996 concerning the posting of workers in the framework of the provision of services. This directive applies to enterprises established in a member state which, in the context of providing transnational services, second workers [...] to the territory of another member state.

Enterprises to which the regulations contained in this Directive apply must take certain transnational measures, ensuring that:

a) The secondment of a worker, on behalf of the enterprise or under its coordination, to the territory of a member state, within the framework of a contract concluded between the enterprise making the secondment and the recipient of the services who operates in that member state, must only take place if there is an employment relationship between the enterprise making the secondment and the worker during the period of secondment; or

b) The secondment of a worker to the territory of a member state to a unit or enterprise that belongs to the group must only take place if there is an employment relationship between the enterprise making the secondment and the worker during the period of secondment; or
c) The secondment, as a temporary employment agency or enterprise that has made a worker available, of a worker to a user enterprise established or operating in the territory of a member state can only take place if there is an employment relationship between the temporary employment agency or the enterprise that has made the worker available and the worker during the period of secondment.
The same Directive defines a posted worker as an employed person who carries out their work in the territory of a member state other than the one in which they usually work, provided that during the posting period they maintain their direct employment relationship (as an employee) with the employing entity.
As a result of maintaining the individual employment contract during the posting period between the employee seconded to another European Union member state and the employer in Romania, the Romanian entity will determine the nature of the activity to be carried out by the seconded employees and has the obligation to pay the remuneration of the posted worker, even if the actual payment is made by the enterprise to which the worker is seconded.
For the transnational secondment of employees of Romanian economic entities, several mandatory elements must be taken into account, such as:

- The necessity of a direct link, determined by the existence of an employment contract between the posted worker and the economic entity making the secondment (which continues to retain the right to coordinate the worker's activities);
- For the purpose of the secondment, the Romanian economic entity must conclude a service provision contract with the economic entity in another European Union member state, where the Romanian worker will carry out the activity.

First and foremost, the employing economic entity in Romania must analyze the legislation of the host country and ensure that the posted employees benefit from the same rights and working conditions as local employees. This includes minimum wage, working hours, paid leave, health insurance, and workplace safety. Companies must ensure that posted employees are not discriminated against in any way based on nationality.
Subsequently, an addendum to the individual employment contract is concluded, which orders the secondment and must contain the following information:

- Duration of the secondment;
- Currency in which the remuneration will be paid;
- Mention of the rates at which the transnationally seconded worker will be paid both during regular working hours and for any overtime performed;
- Climatic conditions at the location of the secondment;
- Maximum/minimum working and rest periods;
- Duration of the holiday leave;
- Health and safety at work;
- Employee protection measures;
- Local customs, the disregard of which could endanger the employee's life, freedom, or personal safety;
- Repatriation conditions.

This document must be registered with the Territorial Labor Inspectorate in the area where the employing economic entity in Romania is based. Regarding the registration of the transnational secondment in Revisal, both the start and end dates of the secondment are recorded in Revisal and submitted on the Reges portal at least one day before it is carried out. Also, when registering the employee's secondment in Revisal, information about the economic entity in the European Union

member state to which the employee is seconded (name, tax code, country where it is based) as well as the period of secondment is completed.
Transnational secondment has a limited duration, and companies must ensure that this duration is not exceeded. Typically, the secondment should not exceed 24 months, with the possibility of extension in certain cases.
Economic entities that carry out transnational secondments are required to register the operation and notify the authorities in the host country before the secondment begins. This notification must contain information about the seconded employees, the workplace, the duration of the secondment, and other relevant details. Additionally, companies must designate a legal representative in the host country.
The work performance is characterized by a limited duration and must be carried out in the interest and benefit of the economic entity that makes the secondment, which continues to bear the typical obligations of an employer, namely: responsibility for employment, management of the employment relationship, payment of remuneration and related contributions, as well as the right to adopt and apply disciplinary measures and dismissal.
Economic entities that second employees to another European Union member state are obliged to pay social contributions and comply with the fiscal rules of the host country for the seconded employees. This may include payments to pension funds, social insurance funds, and other taxes or charges.
An exception to this rule applies to employees for whom the European A1 Form – Portable Document A1 has been requested and obtained. This document exclusively proves the holder's continued coverage under the social security system of the sending state (Romania) by the County Public Pension House in the jurisdiction where the social headquarters/work point is located.
If the seconded employee holds the A1 Form, they will not be obliged to pay social contributions in the host state, but only in the state where the employing economic entity is headquartered. Otherwise, social contributions will be due in both the host country and the home country.
The A1 Form is issued for a maximum period of 24 months, and its validity extends to the territories of the European Union/EEA/Switzerland as well as other countries such as Canada, Israel, Albania, Korea, Macedonia, Moldova, Serbia, Turkey, Quebec, Chile, and Uruguay, due to bilateral social security agreements concluded by Romania with these states.
For work performed in the territory of another member state, the seconded worker will receive the transnational secondment allowance. This allowance, together with the delegation allowance, the secondment allowance, and the allowance for additional benefits received by employees based on the mobility clause, are commonly referred to as per diems. Although the term per diem is frequently used, specialists advise using the exact term from the legislation (e.g., transnational secondment allowance) to avoid the need for further explanations during an authority inspection (e.g., a tax audit).
Law No. 16/2017 regarding the posting of workers in the framework of the provision of transnational services specifies the following: any specific allowance for transnational secondment is considered part of the minimum wage, provided it is not granted as reimbursement for expenses generated by the secondment, such as transport, accommodation, and meals. It is intended to compensate for the inconveniences caused by the secondment, which consist of removing the employee from their usual environment. It should be noted that these employees are provided with accommodation and meals by the employer, the Romanian economic entity, throughout the entire period of the transnational secondment.
The Romanian employer is obligated to pay its employees, during the period of secondment, at least the minimum wage applicable in the member state to which they are seconded, as defined by the legislation and/or practice of that member state. From this, income tax will be deducted in accordance with the tax regulations of the member state, along with any other deductions that may apply (e.g., health insurance, accident insurance, etc.). As mentioned previously, if the seconded worker from Romania to another member state holds the A1 Form, they will not be required to pay social

contributions in the state where they work, as it is considered that they pay such contributions in the state where the employing economic entity is headquartered (e.g., Romania).
In addition to the specific transnational secondment allowance, the employer in Romania is required to ensure that the seconded employee receives at least the national minimum wage, as they are employed under a work contract with the Romanian economic entity, even if they carry out their activities in another member state as a transnational seconded worker.
For example, in the case of seconding a Romanian employee working in the construction sector as an unskilled construction worker to Germany, the Romanian economic entity provided, in 2023, a specific transnational secondment allowance of 15.7 euros gross per hour, thus complying with the member state's minimum wage regulations applicable to that sector. If the seconded worker also performs overtime, these hours will be charged at a higher rate (e.g., 19.62 euros gross per hour).
After determining the gross transnational secondment allowance for each seconded employee, income tax and various other deductions will be subtracted, resulting in the net transnational secondment allowance, which will be received by each transnationally seconded employee. This net amount will be paid by the Romanian employing economic entity to each seconded employee, either via bank transfer or in cash.
Regarding the taxation in Romania of the specific transnational secondment allowance, it is considered part of the income assimilated to salaries and is taxed according to the provisions of Law No. 227/2015 regarding the Fiscal Code for the portion that exceeds the non-taxable limit established as follows:

- Domestically, 2.5 times the legally established level for the allowance, by Government decision for personnel of public authorities and institutions, up to a limit of 3 base salaries corresponding to the occupied position;
- Abroad, 2.5 times the legally established level for the per diem, by Government decision, for Romanian personnel sent abroad to carry out temporary missions, up to a limit of 3 base salaries corresponding to the occupied position.

The ceiling related to the value of 3 salaries corresponding to the occupied position is calculated separately for each month by relating the 3 salaries to the number of working days in that respective month, and the result is multiplied by the number of days corresponding to each month in the period of delegation/secondment/performance of activities in another locality, another country, or abroad.
Under these conditions, the part of the specific transnational secondment allowance that exceeds the non-taxable ceiling specified above is included in the gross salary income of each employee and will be taxed according to the provisions of the fiscal code, with deductions for social security contributions, health insurance contributions, and income tax.
Additionally, both the value of the specific transnational secondment allowance that does not exceed the taxable ceiling and the one that exceeds the taxable ceiling are declared for each seconded employee in Declaration 112 "Declaration regarding the payment obligations of social contributions, income tax, and the nominal record of insured persons"; both are considered part of the total gross income obtained by each seconded employee.
To exemplify the aforementioned, let's consider a hypothetical case involving two employees of a commercial company in Romania operating in the construction sector. The company seconds these two employees to Germany for a secondment period of one year.
Based on the working hours reported by the two employees for April 2024, the net value of the transnational secondment allowance (transnational per diem) that they will receive from the Romanian employer will be as follows:

1. Popescu Paul, construction engineer

The net transnational secondment allowance is €3,246
€3,246 * 4.9758 lei/euro = 16,151.44 lei

2. Marinescu Ion, bricklayer

The net transnational secondment allowance is €1,976
€1,976 * 4.9758 lei/euro = 9,832.18 lei
To determine how much of the transnational secondment allowance for April 2024 will be considered taxable income, the non-taxable ceiling must first be established as follows:

1. (3 * Minimum wage * Number of secondment days) / Number of working days
= (3 * 4,582 lei * 30 days) / 22 days = 18,744.55 lei
2. 35 euros * 2.5 * 30 days * 4.9758 lei/euro = 13,061.48 lei

Following the analysis of the above calculations, it is observed that the non-taxable ceiling will be the lower value established, namely 13,061.48 lei. Thus, it is concluded that the non-taxable value of the transnational secondment allowance for April 2024 is 13,061.48 lei.
Returning to our hypothetical case, we will observe that for the employee Popescu Paul, this non-taxable ceiling is exceeded, whereas for the employee Marinescu Ion, it is not. Under these conditions, for the transnationally seconded employee Popescu Paul, the amount from the net transnational secondment allowance that will be considered income assimilated to salaries and included in the gross salary income, and taxed according to the regulations of Law No. 227/2015 regarding the Fiscal Code, will be 3,089.96 lei (16,151.44 lei – 13,061.48 lei = 3,089.96 lei).
Regarding the accounting records of these values, the transnational secondment allowance will be considered and recorded in the accounts as an advance for settlement (treasury advance) in correspondence with a debt account to third parties, both accounts detailed for each seconded employee. The tax liabilities (income tax, health insurance, accident insurance, etc.) that the employee is obliged to pay in the country where they are transnationally seconded, if they exist, will be recorded in debt accounts to third parties.
The accounting entries in this case would be:

- **Recording the per diem received by the seconded employee:**
  - 542 “Advances for settlement” = 462 “Various creditors”
- **Justifying the per diem:**
  - 625 “Travel, secondment, and transfer expenses” = 542 “Advances for settlement”
- **Payment of the per diem by bank transfer or in cash:**
  - 462 “Various creditors” = %
    - 5124 “Bank accounts in foreign currency”
    - 5314 “Cash in foreign currency”

## 2. CONCLUSIONS

In conclusion, we can assert that the transnational secondment of employees from Romania to other countries in the European Union can be considered a form of work manifestation, and the remuneration associated with it provides employees with an opportunity to increase their own salary income.

**REFRENCES**

* * * Directive 96/71/EC of the European Parliament and of the Council of 16 December 1996 concerning the posting of workers in the framework of the provision of services.
* * * Law No. 16/2017 regarding the posting of workers in the framework of the provision of transnational services
* * * Law No. 227/2015 regarding the Fiscal Code
* * * Government Emergency Ordinance No. 93/2023 published in the Official Gazette No. 993/01.11.2023
* * * Government Decision No. 518/10 July 1995
* * * w.w.w.cursbnr.ro

# COMPARATIVE STUDY REGARDING THE FITNESS OF JUNIOR BADMINTON PLAYERS AND JUNIOR TRACK AND FIELD ATHLETES

[a]***Alexandra Gabriela MILON,*** **Lecturer Ph.D.**
*,,Bogdan Vodă" University of Cluj Napoca, Romania*
email:corinabene@yahoo.com

[b]***Carmina Mihaela GORGAN,*** **Lecturer Ph.D.**
*,,Bogdan Vodă" University of Cluj Napoca, Romania*
*email:carminagorgan@yahoo.com*

**ABSTRACT**

*This study aimed to evaluate the fitness and dexterity of badminton players and track and field athletes (U15 and U17). The evaluation used the Carlson fatigue curve test, the 6x20+20 meters test, and the eye-hand coordination test. The tested subjects belong to Clubul Sportiv Municipal Bacău (the track and field department) and to Clubul Sportiv Școlar Bacău (the badminton department), and were between 14 and 16 years old. These tests were used because the authors wanted to see all the athletes' training level.*

*The study contained 5 badminton players (3 males and 2 females) from CSS Bacău, and 5 track and field athletes (3 males and 2 females) from CSM Bacau. The badminton players performed 4 training sessions per week, while the track and field athletes, 5 training sessions per week.*

*The recorded results showed differences between badminton players and track and field athletes in regards to their cool down capacity and their dexterity.*

*The conclusions are that from the standpoint of their work capacity, the track and field athletes are better trained, however they encountered some difficulties during the eye-hand coordination test.*

**KEYWORDS:** *fitness, track and field, badminton, evaluation.*

**JEL CLASIFICATIONS:** Z20, Z28, Z29

## 1. INTRODUCTION

In any sport, the psycho-motor skills are extremely important, their training leading to the improvement of the athletes' performances, at the same time increasing their work capacity and improving their cool down capacity. Endurance represents "the body's ability to work for a longer period of time without losing effectiveness." (Dragnea et al., 1996).

Dexterity is "the individual's ability to perform new movements with ease and efficiency." (Mârza Dănilă Doina, 2013).

Regardless of the sport, the basis must be good fitness and good training, which gives the ability to perform correctly the physical exercises; fitness improves athletic performance, but for that one must have a regular exercise program that would be a part of the daily training program; fitness presupposes physical activity, which leads to burning calories and maintaining one's weight.

Fitness refers to:

- muscle strength and endurance;

- body flexibility and composition;
- aerobic endurance;
- capacity to relax.

Fitness consists of:

**- *dexterity*: meaning a good coordination of one's entire physical activity;**

**- *balance:* is the ability to perform and establish one's posture, in relation to the exercises that are to be performed;**

- *elasticity:* is the capacity to extend one's muscles as much as possible without any injuries;
- *coordination:* is the capacity to perform multiple tasks at the same time;
- *mobility*: is the capacity to perform joint movements at a wider range as possible without any injuries;
- *strength:* presupposes an enduring muscle mass, speed and maximum power to be able to perform one's training with maximum effects; https://www.tenisaxyall.ro/blog/2016/06/22/pentru-sportivi-conditia-fizica-este-un-subiect-important-dar-pentru-restul/

In both track and field and badminton, the athletes need good endurance, strength and speed, and many times dexterity and mobility are neglected.

Effort is "the result of multiple demands (muscular, cardiorespiratory, endocrine-metabolic, mental, etc.) to which the human body is subjected while performing certain activities" (Dragnea, A., 2000).

Physical adaptation to effort is important for every individual, because the lack of it can lead to functional modifications of the cardiorespiratory, muscular, and bone systems.

Fitness is the ability to perform athletic activities, occupations, and daily life activities and is generally achieved through adequate nutrition moderate and vigorous, exercise and sufficient rest.

"In sports training, evaluation is necessary to assess the level of achievement of one's current goals. It is recommended that the assessment is performed periodically and even continuously, not just at the end of the athletic activity." (V. Tudor, 2005).

## 2. MATERIALS AND METHODS

The study contained 5 badminton players (3 males and 2 females) from CSS Bacau, and 5 track and field athletes (3 males and 2 females) from CSM Bacau. The badminton players performed 4 training sessions per week, while the track and field athletes, 5 training sessions per week. The subjects were between 14 and 16 years old.

The purpose of this paper is to emphasize the athletes' training level, their cool down capacity, and not in the least, their dexterity level.

The initial hypothesis was that presumably, there is a difference between the badminton players and track and field athletes' cool down capacity, and from a dexterity standpoint, the badminton players are better trained.

The research methods used were: the literature study, the testing method, the statistical-mathematical method.

Subjects

The study contained 5 badminton players (3 males and 2 females) from CSS Bacau, and 5 track and field athletes (3 males and 2 females) from CSM Bacau. The badminton players performed 4 training sessions per week, while the track and field athletes, 5 training sessions per week.

### 2.1.Test description

***Carlson fatigue curve test***

This test challenges the subjects very much, but the authors believe that only such a challenge can show the subjects' fitness. The subject runs in place, knees high, for 10 s, with a 10 s break. The subject performs 10 repetitions of 10 s running, with the aforementioned breaks, the tester recording the subject's heart rate as follows:

1. before the test, the subject in a sitting position;
2. 10 s after the 10 repetitions;
3. 2 min after the 10 repetitions;
4. 4 min after the 10 repetitions;
5. 5 min after the 10 repetitions;

The tester records also the number of contacts of the subject's right foot with the floor every series of 10 s, then calculates the total number of touches of the right foot. The interpretation takes into consideration both the heart rate values and the number of touches for the right foot. If the subject is seriously engaged in the challenge, the accumulating fatigue will determine also a decrease in the number of touches of the right foot with the floor. The authors think that this test is also a good means of training, with good results in this sense.

***6x20+20 meters test***

This is a field test, easy to apply and interpret; its goal is to assess the lactacid anaerobe capacity.

*Materials needed:* measuring tape, chalk, timer, or photo-electrical cells. The tester measures and traces two lines 20 meters apart. The subjects must be equipped with appropriate shoes for the court where the test is performed, so that the ground adherence is optimal.

*Description of the test:* after the warm-up, the subject has to run for 20 m, back and forth. This is repeated six times, with a 20 s break between repetitions. The subjects must be encouraged to get through the 20 m at a maximum of their abilities, each time. The start command is always the same: get ready-set-start. The tester records the time for each run.

*Results:* the tester calculates the percentage between the first and last run and interprets the results using the marks presented below.

**Table 1 – Test interpretation**

| Percentage difference | Mark |
|---|---|
| 0 - 1 % | Very good |
| 1 - 3 % | Good |
| 3 - 5 % | Average |
| < 5 % | Poor |

***Eye-hand coordination test***

*Factor:* the test monitors the subjects' capacity to coordinate the information received through the eye so that they would be able to catch the ball (eye-hand coordination);

*Materials needed:* timer, tennis ball, a flat wall.

*Description of the test:* the subject must throw the tennis ball to a wall, then catch it.

*Indications:* a 5-7 minutes warm-up is performed; the subject is at a 2 meters distance from the wall; at the start command, the timer starts; the subject throws the ball with the right hand and tries to catch it with the left hand, then the subject throws the ball with the left hand and catches it with the right, repeating this drill for 30 s.

*Result:* The tester records the number of catches within 30 s.

**Table 2 – Test interpretation**

| Age | Very good | Good | Average | Satisfactory | Poor |
|---|---|---|---|---|---|
| 15-16 y.o. | >35 | 30-35 | 25 - 29 | 20-24 | <20 S |

## 3.RESULTS AND DISCUSSIONS

The following tables present the results recorded by the athletes during the aforementioned tests.

**Table 3 - Badminton players' results for the Carlson drill**

| No. | Surname/ first name | No. of repetitions per series | | | | | | | | | | Pulse after effort | | | | Initial pulse |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | 10 sec | 2 min | 4 min | 5 min | |
| 1. | I. A | 17 | 16 | 14 | 15 | 15 | 15 | 15 | 16 | 15 | 16 | 195 | 118 | 114 | 114 | 86 |
| 2. | S.D. | 17 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 17 | 16 | 174 | 106 | 96 | 98 | 74 |
| 3. | V.M. | 17 | 16 | 17 | 15 | 16 | 16 | 16 | 15 | 15 | 16 | 186 | 112 | 98 | 98 | 82 |
| 4. | I.T. | 17 | 16 | 17 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 175 | 112 | 103 | 103 | 83 |
| 5. | M.I. | 16 | 15 | 17 | 15 | 16 | 15 | 16 | 16 | 15 | 16 | 178 | 114 | 106 | 108 | 82 |
| Arithmetical mean | | 16.8 | 15.8 | 16 | 15.4 | 15.4 | 15.6 | 15.4 | 15.6 | 15.4 | 15.8 | 181.6 | 112.4 | 103.4 | 104.2 | 81.4 |
| Max | | 17 | 16 | 17 | 16 | 16 | 16 | 16 | 16 | 17 | 16 | 195 | 118 | 114 | 114 | 86 |
| Val. | | 16 | 15 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 174 | 106 | 96 | 98 | 74 |

Table 3 shows that the lowest number of right knee lifts recorded by the badminton players was 14, and the highest was 17. The heart rate of the badminton players recorded a drop in the first 2 post-effort minutes. The highest pulse after effort in badminton players was 195.

**Table 4 - Track and field athletes' results for the Carlson drill**

| No. | Surname/ first name | No. of repetitions per series | | | | | | | | | | Pulse after effort | | | | Initial pulse |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | 10 sec | 2 min | 4 min | 5 min | |
| 1. | P. C. | 19 | 19 | 20 | 20 | 19 | 19 | 19 | 20 | 20 | 21 | 121 | 96 | 82 | 79 | 70 |
| 2. | M.T. | 18 | 19 | 19 | 18 | 19 | 19 | 20 | 20 | 19 | 20 | 154 | 82 | 76 | 90 | 83 |
| 3. | M.I. | 18 | 20 | 20 | 20 | 19 | 19 | 19 | 20 | 20 | 20 | 130 | 92 | 78 | 80 | 74 |
| 4. | M.M. | 17 | 16 | 17 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 164 | 81 | 74 | 88 | 81 |
| 5. | M.E. | 16 | 15 | 17 | 15 | 16 | 15 | 16 | 16 | 15 | 16 | 159 | 79 | 75 | 84 | 71 |
| Arithmetical mean | | 17.6 | 17.8 | 18.6 | 17.8 | 17.6 | 17.6 | 17.8 | 18.2 | 17.8 | 18.4 | 145.6 | 86 | 77 | 84.2 | 75.8 |
| Max | | 19 | 20 | 20 | 20 | 19 | 19 | 20 | 20 | 20 | 21 | 164 | 96 | 82 | 90 | 83 |
| Val. | | 16 | 15 | 17 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 121 | 81 | 74 | 79 | 70 |

Table 4 shows that the lowest number of right knee lifts recorded by the track and field athletes was 15, and the highest was 20. The highest pulse after effort in track and field athletes was 164. After the 5 minutes of break, the track and field athletes' pulse was closer to their initial pulse.

**Table 5 - Results recorded by the badminton players during the 6x20+20 meters test and the eye-hand coordination test**

| No. | Surname/ first name | T series 1 | T series 2 | T series 3 | T series 4 | T series 5 | T series 6 | No. of throws/ 30 sec |
|---|---|---|---|---|---|---|---|---|
| 1. | I. A | 7.68 | 7.71 | 7.69 | 7.70 | 7.63 | 7.91 | 30 |
| 2. | S.D. | 7.17 | 7.21 | 7.19 | 7.25 | 7.22 | 7.20 | 31 |
| 3. | V.M. | 7.32 | 7.36 | 7.34 | 7.40 | 7.37 | 7.34 | 30 |
| 4. | I.T. | 8.53 | 8.52 | 8.55 | 8.50 | 8.52 | 8.34 | 32 |
| 5. | M.I. | 8.20 | 8.24 | 8.25 | 8.22 | 8.24 | 8.23 | 30 |
| Arithmetical mean | | 7.76 | 7.80 | 7.80 | 7.81 | 7.79 | 7.84 | 30.6 |
| Max | | 8.43 | 8.52 | 8.55 | 8.50 | 8.52 | 8.54 | 32 |
| Val. | | 7.17 | 7.21 | 7.19 | 7.25 | 7.22 | 7.20 | 30 |

Table 5 shows that during the 6x20+20 meters test, the badminton players recorded a minimal value of 7.17 and a maximum of 8.55. The results between series recorded a difference of up to 9 seconds. During the eye-hand coordination test, all of the badminton players had the mark good. None of them dropped the ball.

**Table 6 - Results recorded by the track and field athletes during the 6x20+20 meters test and the eye-hand coordination test**

| No. | Surname/ first name | T series 1 | T series 2 | T series 3 | T series 4 | T series 5 | T series 6 | No. of throws/ 30 sec |
|---|---|---|---|---|---|---|---|---|
| 1. | P. C. | 7.01 | 7.12 | 7.05 | 7.10 | 7.07 | 6.91 | 22 |
| 2. | M.T. | 7.12 | 7.19 | 7.19 | 7.25 | 7.17 | 7.15 | 29 |
| 3. | M.I. | 6.79 | 6.56 | 6.74 | 6.70 | 6.87 | 6.64 | 30 |
| 4. | M.M. | 8.22 | 8.22 | 8.25 | 8.17 | 7.92 | 7.94 | 25 |
| 5. | M.E. | 8.10 | 8.16 | 8.15 | 8.14 | 8.14 | 8.01 | 29 |
| Arithmetical mean | | 7.44 | 7.45 | 7.47 | 7.47 | 7.43 | 7.33 | 27 |
| Max | | 8.22 | 8.22 | 8.25 | 8.17 | 8.14 | 8.01 | 30 |
| Val. | | 6.79 | 6.56 | 6.74 | 6.70 | 6.87 | 6.64 | 22 |

Table 6 shows that during the 6x20+20 meters test, the track and field athletes recorded a minimal value of 6.56 and a maximum of 8.22. During the run test, they recorded a better time than the badminton players. During the eye-hand coordination test, the track and field athletes had the marks good and satisfactory.

## 4.DISCUSSION

Some authors says that “the difference characteristics in each sport cause the need for a balance or fit of body type because in various sports there will be different physical and physiological characteristics. The characteristics of an athlete's body are determined by assessing his body type (somatotype) as a quantification of body composition and body shape which is important in athlete selection because it will affect the biomechanics of a sport” (Duncan et al., 2006; Gutnik et al., 2015), file:///C:/Users/Admin/Downloads/38147-110874-1-PB.pdf

In others opinion "badminton players use standing broad jump improvement as winning tool during competitions (Petersen D, 2015). Most vital determinant of success is motor performance ability and anthropological fitness (Choen, 2014). Anthropological fitness and training measures and quantifies relationship between bone mass, and body structure of athletes." (Tervo T., et al, 2010). file:///C:/Users/Admin/Downloads/9576-Article%20Text-18756-1-10-20210806.pdf

## 5. CONCLUSIONS

Following the tabulation of the results, the conclusion that can be drawn is that in regards to cool down, the track and field athletes are faster to recover than the badminton players, but at the same time they have a smaller increase in their heart rate. In the badminton players, the difference between the initial pulse and the pulse after effort is higher.
During the 6x20+20 meters test, the track and field athletes recorded a better time than the badminton players, the latter ones working more on the reaction speed.
During the eye-hand coordination test, the badminton players had better marks than the track and field athletes, who encountered difficulties in performing the challenge.
The difference between the sports is clear when looking at the results, the track and field athletes having a better general training than the badminton players.

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# STUDY ON THE EFFORT CAPACITY OF MIDDLE SCHOOL STUDENTS

[a] ***Alexandra Gabriela MILON,*** **Lecturer Ph.D.**
*"Bogdan Vodă" University of Cluj-Napoca, Romania*
*email:corinabene@yahoo.com*

[b] ***Gheorghe SABĂU,*** **Lecturer Ph.D.**
*"Bogdan Vodă" University of Cluj-Napoca, Romania*
*email:gsabau05@yahoo.com*

[c] ***Petre GRIGORAȘ,*** **Lecturer Ph.D.**
*"Bogdan Vodă" University of Cluj-Napoca, Romania*
*email:grigoraspetru@gmail.com*

[d] ***Bogdan Traian MILON***
*Greek-Catholic highschool "Inochetie Micu" Cluj-Napoca, Romania*

**ABSTRACT**

*The effort capacity of middle school students is crucial for their development and daily activities. This body's ability to sustain effort can be enhanced through physical activities. In physical education classes, the gradual implementation of various physical exercises is particularly important for improving the effort capacity of middle school students.*
*The development of effort capacity can be achieved with simple spatial materials, and the teacher must be attentive to the students' starting level to avoid overexertion. The purpose of this study was to identify the effort capacity of middle school students.*
*In this work, we started with the hypothesis that "the effort capacity of students can be influenced through physical education classes in middle school." The subjects of this study were fifth and sixth-grade students, 20 girls and 24 boys, from the Greek-Catholic highschool "Inochetie Micu" Cluj-Napoca.*

**KEYWORDS:** *effort capacity, students, middle school, tests*

**JEL CLASIFICATIONS:** Z20, Z28, Z29

## 1. INTRODUCTION

"The intensity of demand represents the functional price paid by the body to exert effort and it depends on individual characteristics. Intensity of demand should not be confused with effort intensity, which represents the amount of mechanical work performed per unit of time. Efforts of the same intensity result in different functional changes from one individual to another and even within the same individual, depending on the level of training. The intensity of demand is assessed through various functional values: heart rate, respiratory rate, blood pressure. Heart rate indicates the level of oxygen consumption reached by the respective subject, from the maximum oxygen consumption they are capable of."

"The common characteristic of all actions of an individual, regardless of their nature, is energy consumption. When energy sources diminish to a certain level, fatigue ensues. Efforts specific to

physical education and sports are the most significant energy consumers because they involve somato-functional and mental overexertion (stress) of the individual. Through appropriate dosing and directing of effort, the organism is induced to improve at different levels. Directly responsible for the onset of fatigue, effort must be analyzed in correlation with it and with actions aimed at its removal, namely recovery. Through the effort-fatigue-recovery relationship, the energy consumption necessary for the activity can be assessed, an important indicator in effort dosing."

Physical education within the middle school cycle represents an essential pillar for the physical, psychological, and social development of students. Through these courses, students can improve their health status, level of physical fitness, motor skills, posture, and physical appearance.

Moreover, they have the opportunity to develop and consolidate skills for various sports and athletic games, which can bring joy and satisfaction into their lives. In parallel, physical education contributes to the formation of positive values and attitudes, such as respect, fair play, teamwork, cooperation, communication, and social integration. The middle school cycle represents a crucial stage in children's development, considering the characteristics of their age and the period of adolescence. In this perspective, physical education teachers must pay special attention to ensuring harmonious development, encouraging the correct acquisition of motor skills, especially regarding speed and dexterity, without neglecting physical strength and endurance.

The factors influencing effort and its orientation within the curriculum include volume, intensity, and complexity.

"Physical education encompasses a vast number of physical exercises. In its various forms of organization, physical education 'operates' with exercises aimed at influencing the correct and harmonious development of subjects' bodies, exercises for the development of motor qualities, exercises for motor skills (basic, utilitarian-applicative, and specific to sports), exercises from aerobic gymnastics, stretching exercises, exercises from folk or sports dances, etc. The volume, intensity, and complexity of these exercises are evidently at a much lower level compared, for example, to sports training."

"The volume represents the quantity of mechanical work and is assessed through the number of repetitions, distances covered, kilograms lifted, etc. Everything is related to time, resulting in density, a fundamental aspect of effort. Intensity represents the degree of strain on the subjects' bodies. It is expressed as percentages of maximum capabilities (60%, 70%, 80%, etc.), execution tempo (2/4, 3/4, 4/4, etc.), number of executions per unit of time, etc. Complexity represents the concrete manner of linking all elements throughout the effort. It increases when 'opponents' and even teammates appear."

## 2. MATERIALS AND METHODS

The subjects of this study were fifth and sixth-grade students, 20 girls and 20 boys, from the Greek-Catholic High School "Inochetie Micu" in Cluj-Napoca.

The purpose of this work is to identify the level of preparedness and the recovery capacity of the body after effort in fifth-grade students.

The research methods used were: the literature study, the testing method, the statistical-mathematical method.

"The intensity of demand represents the functional price paid by the body to exert effort, and it depends on individual characteristics. The intensity of demand should not be confused with the intensity of effort, which represents the amount of mechanical work performed per unit of time. Efforts of the same intensity lead to different functional changes from one individual to another and even within the same individual, depending on the level of training. The intensity of demand is assessed through various functional values: heart rate, respiratory rate, blood pressure. Heart rate indicates the level of oxygen consumption reached by the respective subject, from the maximum

oxygen consumption they are capable of. For example, a heart rate of 128 beats/minute in men and 138 beats/minute in women represents an oxygen consumption of 50% of the subject's maximum oxygen consumption."

"The common trait of all actions of an individual, regardless of their nature, is energy consumption. When energy sources diminish to a certain level, fatigue sets in. Efforts specific to physical education and sports are the most significant energy consumers because they involve somato-functional and psychological overexertion (stress) of the individual. Through appropriate dosing and directing of effort, the organism is induced to improve at different levels. Directly responsible for the onset of fatigue, effort must be analyzed in correlation with it and with actions aimed at its removal, namely recovery. Through the effort-fatigue-recovery relationship, the energy consumption necessary for the activity can be assessed, an important indicator in effort dosing."

## 3.RESEARCH PROCEDURE

For our research, we conducted the following tests:

The tests were conducted as follows:

*The Ruffier Tes*t, termed by the author as a "fitness assessment test," is a submaximal effort test based on measuring heart rate (HR) during the recovery period after exertion. It represents a screening test that applies mainly to beginners and is low-risk. Technique: The student, in a resting state, is seated and their pulse is recorded for 15 seconds, multiplied by 4 to obtain the resting pulse rate (P1). Then, the student performs 30 squats in 45 seconds, and from the initial position, the pulse is measured again for 15 seconds between seconds 0-15 post-exertion, multiplied by 4 to obtain the effort pulse rate (P2). The student remains seated for 1 minute, and in seconds 45-60 of this post-exertion minute, the pulse is measured again for 15 seconds, multiplied by 4 to obtain the recovery pulse rate (P3). The formula used is: I.R. = (P1+P2+P3-200)/10 Interpretation of the test: - Values less than 0 (negative) = very good result; - Values between 0-5 = good; - Values between 5-10 = average; - Values between 10-15 = satisfactory; - Values exceeding 15 = unsatisfactory result, and further investigations of the cardiovascular system are required. Based on the obtained values, the subject is directed to improve their physical condition by engaging in physical activity and sports of any kind.

*The Master Test (Two-Step Test)* involves climbing and descending a staircase with two steps, each 22 cm high, a certain number of times determined by the author, varying between 20 and 25, depending on age, gender, and body weight. The test lasts for 1 minute and 30 seconds, and after 2 minutes, the heart rate is determined. Normal organism recovery capacity is indicated if, 2 minutes after exertion, the heart rate is not more than 10 beats higher than the resting heart rate.

*Carlson's Fatigue Curve Test* This test significantly challenges the student, assuming that only such a challenge can demonstrate physical condition. It involves running in place with knees lifted for 10 seconds, with a 10-second rest interval. Ten repetitions of 10-second running intervals, with respective rest intervals, are executed, and the heart rate is recorded: - Before the exercise in a seated position; - At 10 seconds after the 10 repetitions; - At 2 minutes after the 10 repetitions; - At 4 minutes after the 10 repetitions; - At 5 minutes after the 10 repetitions. The number of touches of the right foot to the ground/floor is recorded for each 10-second interval, and then the total number of touches of the right foot is calculated. Both heart rate values and the number of right foot touches are considered in interpreting the test. If the student participates seriously in the experiment, accumulated fatigue will also result in a decrease in the number of right foot contacts with the ground. This test is considered a good training tool, yielding excellent results in this regard as well.

**Table 1. Individual Results Recorded in the Ruffier Test – Initial and Final**

| CLASS | | | a V-a | | | |
|---|---|---|---|---|---|---|
| GENDER | | | Boys | | Girls | |
| TEST | | | Ruffier | | Ruffier | |
| Nr. crt. | Name | | I.T. | F.T. | I.T. | F.T. |
| | B | G | | | | |
| 1 | A.M. | A.M. | 3 | 3 | 1 | 1 |
| 2 | A.G. | A.G. | 5 | 4 | 6 | 4 |
| 3 | A.C | A.E. | 2 | 2 | 4 | 3 |
| 4 | B.G. | A.I. | 7 | 5 | 7 | 6 |
| 5 | B.A | B. M | 4 | 3 | 2 | 2 |
| 6 | C.I. | B. I. | 5 | 5 | 6 | 5 |
| 7 | C.M | C.A | 3 | 2 | 3 | 3 |
| 8 | C. A. | C.E. | 5 | 4 | 4 | 3 |
| 9 | D. D. | C.A. | 2 | 2 | 0 | 0 |
| 10 | E. S. | C. N. | 8 | 7 | 1 | 0 |
| 11 | H.D. | F.M. | 0 | 0 | 2 | 2 |
| 12 | L.D. | L.M. | 4 | 4 | 5 | 4 |
| 13 | L. A | L.I. | 3 | 1 | 4 | 3 |
| 14 | L.D. | M.M. | 5 | 5 | 5 | 4 |
| 15 | M.A. | M.E. | 2 | 1 | 2 | 2 |
| 16 | M.D. | M.R. | 3 | 2 | 1 | 0 |
| 17 | P.A. | N.A. | 0 | 0 | 5 | 5 |
| 18 | T.L. | N.M. | 4 | 3 | 3 | 3 |
| 19 | T.M. | V.I. | 6 | 4 | 4 | 3 |
| 20 | V.A. | V.A. | 3 | 2 | 6 | 5 |
| $X_{MAX}$ | | | 8 | 7 | 7 | 6 |
| $X_{MIN}$ | | | 0 | 0 | 0 | 0 |
| M.a. | | | 3.7 | 3 | 3.5 | 2.9 |

Following the initial Ruffier test, the lowest recorded value among boys is 0, indicating very good physical condition, found in 2 out of 10 boys; among girls, the lowest recorded value is also 0, present in one girl. The highest value among boys is 8, representing average physical condition, while among girls, the highest value is 7, also representing average physical condition. No unsatisfactory values were recorded.

**Table 2. Results of the initial Master test in the fifth grade.**

| *Class* | | | *A V-a* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Test* | | | *Master* | | | | | | | | | | | |
| *Gender* | | | *H.R. – Boys* | | | | | | *H.R. - Girls* | | | | | |
| *Nr. crt.* | *Girls name* | *Boys name* | *Rest* | | *Post effort* | | *Dif. HR Rep/Post* | | *Rest* | | *Post effor* | | *Dif. HR Rep/Post* | |
| | | | *I.T.* | *F. T.* | *I.T.* | *F. T.* | *I.T.* | *F. T.* | *I.T.* | *F. T.* | *I.T.* | *F. T.* | *I.T.* | *F. T.* |
| 1 | A.M. | A.M. | 81 | 79 | 83 | 81 | 2 | 2 | 70 | 70 | 75 | 73 | 5 | 3 |
| 2 | A.G. | A.G. | 78 | 80 | 82 | 82 | 4 | 2 | 89 | 90 | 96 | 95 | 7 | 5 |
| 3 | A.E. | A.C | 78 | 79 | 81 | 81 | 3 | 2 | 75 | 77 | 80 | 79 | 4 | 2 |
| 4 | A.I. | B.G. | 78 | 80 | 82 | 82 | 4 | 2 | 89 | 90 | 96 | 95 | 6 | 5 |
| 5 | B. M | B.A | 83 | 80 | 90 | 87 | 7 | 7 | 89 | 89 | 98 | 96 | 7 | 7 |
| 6 | B. I. | C.I. | 83 | 80 | 90 | 87 | 7 | 7 | 89 | 89 | 98 | 96 | 7 | 7 |
| 7 | C.A | C.M | 82 | 82 | 88 | 86 | 6 | 4 | 91 | 90 | 100 | 98 | 9 | 8 |
| 8 | C.E. | C. A. | 77 | 75 | 78 | 75 | 1 | 0 | 76 | 77 | 85 | 83 | 7 | 6 |
| 9 | C.A. | D. D. | 83 | 80 | 90 | 87 | 7 | 7 | 89 | 89 | 98 | 96 | 7 | 7 |
| 10 | C. N. | E. S. | 77 | 75 | 78 | 78 | 1 | 3 | 76 | 77 | 85 | 83 | 7 | 6 |
| 11 | F.M. | H.D. | 89 | 88 | 96 | 94 | 7 | 6 | 93 | 93 | 101 | 100 | 8 | 7 |
| 12 | L.M. | L.D. | 82 | 82 | 88 | 86 | 6 | 4 | 91 | 90 | 100 | 96 | 7 | 6 |
| 13 | L.I. | L. A | 89 | 88 | 96 | 94 | 7 | 6 | 93 | 93 | 101 | 100 | 8 | 7 |
| 14 | M.M | L.D. | 90 | 90 | 93 | 92 | 3 | 2 | 86 | 87 | 90 | 89 | 3 | 2 |
| 15 | M.E. | M.A. | 78 | 79 | 80 | 80 | 2 | 1 | 75 | 77 | 80 | 79 | 5 | 2 |
| 16 | M.R. | M.D. | 76 | 76 | 84 | 83 | 7 | 7 | 77 | 79 | 79 | 79 | 2 | 0 |
| 17 | N.A. | P.A. | 75 | 78 | 77 | 79 | 2 | 1 | 90 | 88 | 90 | 90 | 0 | 2 |
| 18 | N.M. | T.L. | 83 | 80 | 90 | 87 | 7 | 7 | 89 | 89 | 98 | 96 | 9 | 7 |
| 19 | V.I. | T.M. | 89 | 88 | 96 | 94 | 7 | 6 | 93 | 93 | 101 | 100 | 8 | 7 |
| 20 | V.A. | V.A. | 77 | 75 | 78 | 78 | 1 | 3 | 76 | 77 | 85 | 83 | 6 | 6 |
| $X_{max}$ | | | 90 | 90 | 96 | 94 | 7 | 7 | 93 | 93 | 101 | 100 | 9 | 8 |
| $X_{min}$ | | | 75 | 75 | 77 | 75 | 1 | 0 | 70 | 70 | 75 | 73 | 0 | 0 |
| M.a. | | | 81.4 | 80.7 | 86 | 84.6 | 4.7 | 3.9 | 84.8 | 85.2 | 91.8 | 90.3 | 6.1 | 5.1 |

Following the initial Master test, the following values were obtained:

Both for girls and boys, the post-exertion heart rate exceeded between 0-9 beats per minute compared to the resting heart rate.

In conclusion, all fifth-grade students exhibit good cardiovascular behavior, indicating a good level of physical fitness.

Following the final Master test, the following values were obtained:

For both girls and boys, the post-exertion heart rate exceeded between 0-8 beats per minute compared to the resting heart rate.

Progress was observed in both girls and boys following the Master test, both initial and final, considering the heart rate; the number of post-exertion beats decreased by one value in the final test.

**Table 3. Initial Results Carlson's Fatigue Curve Test - HR before and post-exertion**

| *Gender* | | | *HR – Girls* | | | | | *HR - Boys* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nr. Crt* | *Name* | | Î | 10s | 2m | 4m | 5m | Î | 10s | 2m | 4m | 5m |
| | *G* | *B* | | | | | | | | | | |
| 1 | A.M. | A.M. | 81 | 150 | 96 | 89 | 82 | 70 | 145 | 110 | 82 | 72 |
| 2 | A.G. | A.G. | 78 | 155 | 100 | 85 | 79 | 89 | 170 | 120 | 95 | 91 |
| 3 | A.E. | A.C | 85 | 175 | 110 | 90 | 86 | 90 | 176 | 135 | 110 | 92 |
| 4 | A.I. | B.G. | 87 | 150 | 125 | 100 | 93 | 86 | 160 | 120 | 100 | 93 |
| 5 | B. M | B.A | 77 | 148 | 98 | 90 | 80 | 77 | 165 | 130 | 99 | 79 |
| 6 | B. I. | C.I. | 80 | 164 | 110 | 92 | 84 | 81 | 146 | 120 | 85 | 78 |
| 7 | C.A | C.M | 79 | 160 | 99 | 92 | 80 | 80 | 175 | 140 | 115 | 84 |
| 8 | C.E. | C. A. | 85 | 170 | 100 | 89 | 87 | 86 | 165 | 126 | 110 | 90 |
| 9 | C.A. | D. D. | 86 | 166 | 112 | 90 | 88 | 88 | 174 | 150 | 115 | 91 |
| 10 | C. N. | E. S. | 78 | 160 | 110 | 87 | 80 | 78 | 160 | 120 | 87 | 79 |
| 11 | F.M. | H.D. | 86 | 153 | 109 | 100 | 87 | 90 | 166 | 130 | 115 | 93 |
| 12 | L.M. | L.D. | 78 | 154 | 100 | 88 | 80 | 89 | 150 | 120 | 98 | 94 |
| 13 | L.I. | L. A | 79 | 155 | 102 | 86 | 79 | 89 | 165 | 117 | 95 | 90 |
| 14 | M.M. | L.D. | 86 | 173 | 108 | 92 | 87 | 86 | 176 | 132 | 110 | 92 |
| 15 | M.E. | M.A. | 87 | 155 | 117 | 100 | 93 | 89 | 156 | 136 | 112 | 93 |
| 16 | M.R. | M.D. | 86 | 160 | 114 | 93 | 88 | 87 | 160 | 165 | 110 | 90 |
| 17 | N.A. | P.A. | 85 | 175 | 110 | 90 | 86 | 90 | 170 | 135 | 110 | 92 |
| 18 | N.M. | T.L. | 85 | 160 | 123 | 89 | 86 | 89 | 145 | 126 | 110 | 93 |
| 19 | V.I. | T.M. | 77 | 158 | 106 | 86 | 78 | 79 | 150 | 117 | 86 | 80 |
| 20 | V.A. | V.A. | 78 | 160 | 124 | 98 | 80 | 80 | 143 | 127 | 96 | 85 |
| $X_{max}$ | | | 91 | 175 | 125 | 100 | 93 | 91 | 176 | 150 | 115 | 94 |
| $X_{min}$ | | | 77 | 150 | 96 | 85 | 80 | 70 | 143 | 110 | 82 | 72 |
| M.a. | | | 82.1 | 160 | 108.6 | 91.3 | 83.7 | 84.6 | 160.8 | 128.8 | 102 | 87.5 |

Following the initial Carlson's Fatigue Curve Test, the highest recorded HR after 10 seconds of exertion was 184 for girls and 182 for boys; the lowest value was 150 for girls and 143 for boys. Post-exertion HR did not exceed by more than 5 beats per minute compared to the resting HR for both girls and boys.

**Table 4. Final Results Carlson's Fatigue Curve Test - HR before and post-exertion for the fifth grade**

| *Gender* | | | *HR – Girls* | | | | | *HR– Boys* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Nr. crt* | *Name* | | Î | 10s | 2m | 4m | 5m | Î | 10s | 2m | 4m | 5m |
| | *G* | *B* | | | | | | | | | | |
| 1 | A.M. | A.M. | 81 | 140 | 96 | 89 | 81 | 70 | 140 | 100 | 82 | 70 |
| 2 | A.G. | A.G. | 78 | 155 | 99 | 83 | 78 | 90 | 160 | 120 | 95 | 91 |
| 3 | A.E. | A.C | 83 | 170 | 110 | 89 | 86 | 88 | 162 | 133 | 107 | 90 |
| 4 | A.I. | B.G. | 91 | 170 | 119 | 95 | 92 | 90 | 168 | 120 | 100 | 92 |
| 5 | B. M | B.A | 78 | 160 | 98 | 88 | 80 | 74 | 165 | 130 | 99 | 75 |
| 6 | B. I. | C.I. | 80 | 164 | 110 | 88 | 82 | 78 | 166 | 120 | 82 | 78 |
| 7 | C.A | C.M | 74 | 160 | 99 | 90 | 77 | 90 | 165 | 134 | 102 | 92 |
| 8 | C.E. | C. A. | 87 | 170 | 100 | 89 | 88 | 89 | 165 | 120 | 99 | 90 |
| 9 | C.A. | D. D. | 85 | 166 | 112 | 92 | 88 | 90 | 162 | 128 | 98 | 91 |
| 10 | C. N. | E. S. | 77 | 158 | 100 | 87 | 80 | 78 | 160 | 120 | 87 | 79 |
| 11 | F.M. | H.D. | 80 | 157 | 125 | 83 | 82 | 90 | 166 | 120 | 95 | 92 |
| 12 | L.M. | L.D. | 80 | 160 | 108 | 87 | 82 | 78 | 162 | 121 | 82 | 78 |
| 13 | L.I. | L. A | 78 | 155 | 99 | 83 | 78 | 90 | 164 | 130 | 95 | 92 |
| 14 | M.M. | L.D. | 85 | 164 | 112 | 95 | 88 | 90 | 150 | 132 | 102 | 91 |
| 15 | M.E. | M.A. | 82 | 120 | 90 | 82 | 80 | 80 | 120 | 97 | 77 | 85 |
| 16 | M.R. | M.D. | 77 | 160 | 100 | 87 | 80 | 77 | 160 | 120 | 87 | 77 |
| 17 | N.A. | P.A. | 85 | 175 | 108 | 89 | 86 | 85 | 162 | 131 | 107 | 87 |
| 18 | N.M. | T.L. | 80 | 170 | 110 | 88 | 82 | 78 | 166 | 120 | 82 | 78 |
| 19 | V.I. | T.M. | 77 | 160 | 100 | 87 | 80 | 77 | 160 | 120 | 87 | 77 |
| 20 | V.A. | V.A. | 81 | 170 | 110 | 87 | 86 | 88 | 167 | 134 | 107 | 89 |
| $X_{max}$ | | | 91 | 170 | 125 | 92 | 92 | 90 | 168 | 134 | 107 | 92 |
| $X_{min}$ | | | 74 | 120 | 90 | 80 | 77 | 70 | 120 | 97 | 77 | 70 |
| M.a. | | | 80.9 | 160.2 | 105.2 | 87.9 | 82.8 | 83.5 | 159.5 | 122.5 | 93.6 | 84.7 |

Following the final Carlson's Fatigue Curve Test, the highest recorded HR after 10 seconds of exertion was 170 for both girls and boys; the lowest value was 120 for both girls and boys. Post-exertion HR did not exceed by more than 5 beats per minute compared to the resting HR for both girls and boys.

Comparing HR before and after 5 minutes of exertion, in the case of boys, a good recovery capacity of the organism is observed, as in all cases, HR was lower in the final test, highlighting progress.

## 4.DISCUSSIONS

"Physical activity is an important aspect of any health promotion program, and lack of it is a primary risk factor for many lifestyle-related diseases. Promoting health and physical activity is the responsibility of a number of agencies and institutions, and schools are central to most policies." (Physical Activity Levels in Middle and High School Physical Education - Stuart J Fairclough, Gareth Stratto – 2005)

"Middle school students and primary school students preferred moderate-intensity physical exercise, followed by low-intensity exercise, and the number of students choosing high-intensity exercise is less than the other two. Exercises with moderate intensity, such as running, playing badminton, and playing table tennis, and with equal load and weak antagonism and competition are popular among primary and middle school students. Such exercise programs are easy to carry out and can release students' pressure on study and life. Most students can participate in physical exercise, but the number of students who eventually form physical exercise habits is small". (Physical Exercise of Primary and Middle School Students From the Perspective of Educational Psychology and Parents' Entrepreneurship Education, Chao Song, Sha Ge, Jingjing Xue, and Wanxiang Yao – 2022)

## 5. CONCLUSIONS

Physical education is crucial for middle school students as it helps improve their health and fitness levels while developing motor skills and coordination.

Through physical education lessons, middle school students learn not only about the importance of physical activity, but also about values such as fair play, cooperation, and respect for others.

Physical education in middle schools plays an essential role in promoting an active and healthy lifestyle, thus contributing to shaping a generation of adults who are aware of the importance of physical activity for their physical and mental well-being.

"Physical education and sports are disciplines in the school curriculum that can help in various ways in educating and shaping children, young people, and adults, thereby contributing to their personal and professional development. Physical education represents a component of education expressed through a type of motor activity that has organizational forms and rules aimed at optimizing the child's biometric and psychic potential for improving quality of life". (Importance of Physical Education and Sports in the Current Context – Acsinte Marinela, National College "A. T. Laurian" Botoșani, 2018)

"School health education courses improve students' health awareness through the transmission of health knowledge, which is conducive to cultivating their healthy behaviors and eliminating or reducing the impact of unhealthy factors on students' physical and mental health. Physical exercise is an effective means to promote the physical and mental health of students in the context of health education". (Can school health education improve students' physical exercise time? Empirical research based on CEPS (2014-2015) survey data – Huamei Zhong, Jingjing Zhou, Dan Xu, Tianbiao Liu)

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# OPTIMIZATION OF THE TRAINING AND COMPETITION MODEL IN MIDDLE-DISTANCE EVENTS FOR JUNIORS

**Carmina Mihaela GORGAN[a], Lecturer Ph.D.**
email:carminagorgan@yahoo.com
**Alexandra Gabriela MILON[b], Lecturer Ph.D.**
email:milon.alexandra@yahoo.ro
**Gheorghe SABĂU[c] , Lecturer Ph.D.**
email:gsabau05@yahoo.com

[a,b,c,]*Bogdan Vodă University, Cluj-Napoca*

**ABSTRACT**

*In this paper, we aimed to analyze the training and competition model of junior athletes from the Municipal Sports Club Bacău and to bring improvements based on this analysis. The hypothesis we started from was that it is possible to improve the training and competition model in middle-distance events for juniors by increasing the volume of the interval training method. The purpose of the paper was to optimize a training and competition model for middle-distance events for juniors. The research was conducted over a six-month period, from September 2023 to March 2024, in Bacău County and involved four athletes competing in middle-distance events.*

**KEYWORDS**: training, competition, middle-distance events, juniors
**JEL Clasifications:** Z20, Z22, Z29

## 1.INTRODUCERE

Every coach has asked themselves at least once: "What more can I do to help the athlete surpass their performance?" Especially now, we can say that performance sports present specific conditions, with the main objective being to bring athletes to the podium at major competitions such as the European Youth Olympic Festival, the World Junior Championships, the European Championships, and the Balkan Championships. Progress in performance is continuous, and therefore the coach has the responsibility to create training plans and tests, more or less sophisticated, to evaluate the athlete's potential.

Analyzing the evolution of various world records in middle-distance events from 1912 to 2024 shows an improvement in the men's 800m event from 1'51"9 to 1'40"91, a gain of 11 seconds, or 9.83%; while the men's 1500m record has improved from 3'55"8 to 3'26"00, a gain of approximately 29 seconds or 12.64%. In the long-distance events, such as the 5000m and 10000m, there is a progress of 13.89% and 16.54%, respectively, from which it can be deduced that long-distance events have progressed the most, especially in recent decades.

Nowadays, it is clear to those involved in sports that the improvement of athletic performance and records in all disciplines has become possible due to the enhancement of training methods, training planning, and recovery means. To improve an athlete's performance, the coach must determine the specific qualities that need to be improved. The specificity of training is becoming increasingly important. Since increasing the frequency and intensity of training has its limits, qualitative preparation is necessary to continue improving the athlete's performance. Each training program allocates a significant volume to developing the qualities required by the practiced event. "Sporting performance is both an indicator of the quality of the work performed by the athlete and a measure of their success" (Matveev, 1981).

Speaking of pushing limits, we inevitably discuss fatigue and its correlations with performance in aerobic endurance sports, such as middle-distance events. It is believed that the ultimate limitation in middle-distance events is imposed by the nervous system and not by the athlete's capacity to transport and utilize oxygen during effort. This notion is based on the idea that the central nervous system integrates information from various sources, such as muscles, the heart, and the respiratory system during effort, and prevents the deterioration of skeletal muscles or damage to the heart and other vital organs.

The interval training method involves breaking down the effort into several sets and introducing breaks between them. A characteristic of this method is "the incomplete recovery of the body (HR≈120-140 beats/min), and we can highlight three working variants:

a) **Short interval method** – efforts lasting between 10 seconds and 1 minute, with incomplete recovery between sets;

b) **Medium interval method** – efforts lasting between 1 and 5 minutes, with incomplete recovery between sets;

c) **Long interval method** – efforts lasting more than 5 minutes, with incomplete recovery between sets" (Dragnea, 1996).

On the other hand, low-volume interval training can also be an efficient and practical method for physical improvement. The fundamental principle of interval training involves alternating periods of moderately intense exercise with periods of lower intensity or complete rest for recovery. Low-volume interval training refers to "workouts with a limited amount of activity" (Gibala MJ et al., 2014) and represents the minimum threshold of exercise intensity for developing aerobic capacity, usually at 40-45% of maximum oxygen uptake (VO2max) (Mang ZA et al., 2021). Other studies show that excessive physical activity disrupts the body's balance and weakens immune function in blood variables, which can lead to a state of lethargy that ultimately decreases sports performance (Saidi, K., et al., 2019).

## 2. MATERIALS AND METHODS

The purpose of this study is to analyze the training plan based on a higher volume of the interval method and its effect on athletic performance.

The athletes who participated in this study numbered five and were divided into two groups: an experimental group (n=2) that followed a training program based on a higher volume of the interval method, and a control group (n=3) that followed a training program based on a lower volume of the interval method, with the intensity being the same for both groups.

**Table 1 Athlete Variables**

| Variables | Experimental Group (n=2) | Control Group (n=3) |
|---|---|---|
| Age | 16 | 17 |
| Height | 1.82 | 1.81 |
| Weight | 61.5 | 65 |
| Body Mass Index | 18.62 | 19.84 |

The endurance of the two groups was tested before and after six months of training using a widely recognized test, the Cooper Test. This test was used to evaluate the athletes' performances and their ability to cover the longest possible distance in 12 minutes. Before starting the test, the athletes warmed up for 20 minutes by running, stretching exercises, and running drills. They then ran for 12

minutes. During the test, they were informed about the remaining time until the end of the test. The distance covered was recorded for each athlete individually.

## 3.FINDINGS

*The total volume of work using the interval method during the preparatory period for the control group was 60 km, and during the competition period, it was 75 km. For the experimental group, the training started with 60 km using this method and was reduced to 35 km by March.*

*Table 2 - Total Volume of Work in the Training Plan – Interval Method*

| Preparatory period | | Competition period | |
|---|---|---|---|
| Control group | Experimental group | Control group | Experimental group |
| 60km | 60km | 75km | 35km |

At the beginning of the 6-month program, insignificant differences were observed between the groups in the Cooper Test. However, at the end of the 6-month training program based on increasing the volume in the interval method, the difference was significant.

**Table 3 Cooper Test Results**

| | Experimental group | Control group |
|---|---|---|
| Average Results of the Cooper Test - Initial | 3.020m | 3.050m |
| Average Results of the Cooper Test - Final | 3420m | 3.170m |

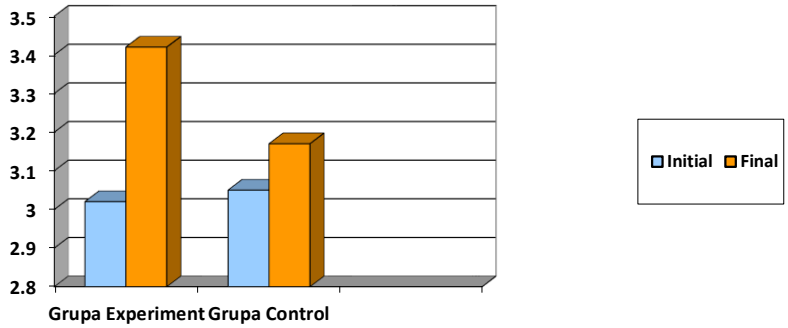


**Chart no. 1 Average Results of the Cooper Test for the Two Groups**

From Table no. 2, the following differences can be observed between the average results obtained in the initial testing and the average results obtained in the final testing between the two groups in the Cooper Test:

The experimental group recorded an initial average of 3,020m and a final average of 3,420m, with a difference of 400m, which represents progress compared to the initial test, with athletes covering a longer distance.

The control group recorded an initial average of 3,050m and a final average of 3,170m, with a difference of 120m, which also represents progress compared to the initial test, but less than the experimental group.

**Table 4 VO2 Max Results Following the Cooper Test**

| | Experimental group | Control group |
|---|---|---|
| VO2 max - Initial | 56.23 | 56.90 |
| VO2 max - Final | 65.17 | 59.58 |

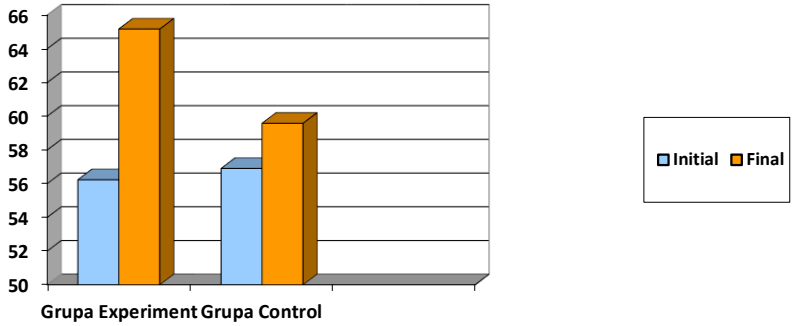


**Chart no. 2 VO2 Max Values Following the Cooper Test Results for the Two Groups**

From Table no. 4, the following differences can be observed between the average values obtained in the initial testing and the average values obtained in the final testing between the two groups for VO2 max following the Cooper Test:

The experimental group recorded an initial average value of 56.23 and a final average of 65.17, with a difference of 8.94, which represents progress compared to the initial test, with athletes showing improved values.

The control group recorded an initial average of 56.90 and a final average of 59.58, with a difference of 2.68, which also represents progress compared to the initial test, but much less than the experimental group.

## 4. CONCLUSIONS

At the beginning of the 6-month program, differences between the groups were observed. The experimental group showed a greater improvement in VO2 max values obtained from the Cooper Test compared to the control group. Following the analysis of the average results obtained by the experimental group in the Cooper Test at the end of the program, improvements in the distance covered during the test were observed, with 400 meters more than the initial test and 280 meters more than the control group, which followed the interval training method with lower volume and higher intensities.

In conclusion, this study shows that the interval training method with increased volume and moderate intensity (80-85%) seems to be a more effective method for improving aerobic capacity than the interval training method with reduced volume and higher intensity (90-95%). We can say that the interval training method with increased volume and moderate intensity (80-85%) offers advantages over training with reduced volume and higher intensity (90-95%), promoting the development of aerobic capacity and reducing the risk of overuse injuries.

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# CIVIL PROCEDUAL TOOLS FOR FILTERING LEGAL ACTIONS CONSIDERING THE CONTRADICTORY BEHAVIOR OF THE PARTIES

**Nicolae Sergiu CÂRLAN, Lecturer Ph.D.**

*"Bogdan Vodă" University,*
*Email: sergiucarlan@ymail.com*

**ABSTRACT**
*The necessity of filtering legal actions through the introduction of a control mechanism, aimed at preventing, on one hand, the abuse of rights, and on the other hand, the overloading of courts with inadmissible claims, whether due to their informal nature or their manifestly inadmissible character, has led to the birth of a concept originating in Anglo-Saxon law, developed in the form of the estoppel theory. This theory acts as a bar to the exercise of legal actions where a party exercises a right contrary to their previous procedural conduct or in contradiction with a clause agreed upon with the opposing party.*
*The theory also holds significant importance in substantive law, functioning as a legal principle that prevents an individual from asserting a right that contradicts their previous actions or arguments, whether in a contractual relationship or under the law. It is intended to prevent parties in a legal relationship from being unjustly treated due to the inconsistencies in the actions of the opposing party.*

**KEYWORDS:** estoppel, admissibility, good faith, procedural law.
***J.E.L Classification:*** *K40, K42, K49*

## 1. THE CONCEPT OF ESTOPPEL

In the jurisprudence of countries that recognize the concept, several forms of estoppel are used:

- *estoppel by conduct* – This prevents a person from denying what has resulted from their previous conduct or personal act. It stops a party from contradicting their own prior representation of reality, especially if this representation induced the other party to develop a corresponding belief. If the aspects already agreed upon are called into question, it could harm the other party. This mechanism is, by definition, defensive, as it acts as an obstacle to any claim (for nullity, restitution, etc.) aimed at challenging a situation that the defendant, based on the claimant's conduct, perceived as acquired or secured.

- *estoppel by deed* – This is invoked against someone attempting to deny what they have declared in a document, official record, or public register.

- *estoppel by record* (or *res judicata*) – This prevents the reopening of a case that has already been adjudicated. It overlaps with the concept of res judicata.

- *equitable estoppel* – This has two main forms: promissory estoppel and proprietary estoppel.

*Promissory estoppel* strengthens an informal understanding based on the principle of equity. It implies that a person cannot rely on the informal nature of a contract initiated by them to the detriment of the

other party. This is applicable when the other party, in good faith, has fulfilled the agreed obligations or established other legal relations based on the contractual relationship.
*Proprietary estoppel* essentially enforces the terms of a promise. It allows a person to claim a right to a property if, based on an agreement, they believed the right of ownership would eventually be transferred to them. This belief led them to make substantial improvements to the property, acting as its owner.
Another definition states that the rule of estoppel prevents a party from denying the truth of a previous statement about a factual situation made to another person, who acted to their own detriment based on that statement. Alternatively, the party making the statement secured a benefit for themselves as a result.
For example, in the United States, judicial estoppel (or estoppel by inconsistent positions) allows claims to be dismissed as inadmissible if they are incompatible with arguments previously presented by the same party before a different judge. American courts generally consider three key elements for applying judicial estoppel:

a) The claimant's position must be clearly incompatible with the one taken before the first court;
b) It must be possible to conclude that the claimant intended to mislead the judge;
c) The claimant must be seeking to obtain an unfair advantage for themselves or cause harm to the opposing party through such behavior.

Therefore, judicial estoppel can only be invoked against a claimant acting in bad faith, not against one who contradicts themselves due to error or ignorance.
According to some French authors, the concept originates from canon law as a consequence of the principle "venire contra factum proprium nulli conceditur" (no one is allowed to act contrary to their previous conduct). This principle prohibits a person from opposing their previous conduct, which blatantly contradicts their subsequent procedural stance, to the detriment of another person.
This principle is particularly applicable in international arbitration, under the body of non-state rules known as lex mercatoria. This normative framework is characterized by flexibility and dynamism, distinct from national jurisdictions.
Initially, the need for flexible regulation methods was of theoretical interest. However, starting in the 1970s, this need took on a more practical interest, developing into an autonomous corpus of rules within international trade law. This evolution was closely tied to the rapid development of major international trade institutions, such as the International Chamber of Commerce in Paris and the International Court of Arbitration.

As indicated in the legal doctrine, *lex mercatoria* was framed as a flexible, informal jurisdiction with applicable rules and arbitrators operating within a private jurisdiction of international trade.

## 2. THE DEVELOPMENT OF THE ESTOPPEL RULE IN FRENCH LAW

An important moment in the development of the "estoppel" rule occurred following a decision by the French Court of Cassation in the case known as Golshani v. The Islamic Republic of Iran, which effectively recognized this principle developed in international law.
In this case, the claimant requested, in 1982, that the Iran-United States Claims Tribunal award him compensation from the Iranian state following an expropriation. However, his request was rejected by an arbitral award. The ruling subsequently became the subject of an exequatur procedure in France, which the claimant contested on the grounds that the arbitral tribunal had no jurisdiction, as there was no arbitration agreement underpinning the tribunal's authority to resolve the dispute.
The French Court of Cassation ruled that the claimant, having actively engaged with the arbitral tribunal for over nine months and having submitted his claim for compensation to this tribunal, could not subsequently argue — through a procedural stance inconsistent with his earlier conduct — that

the tribunal lacked jurisdiction due to the absence of an arbitration agreement. This position was justified under the estoppel rule.
By invoking this rule, the French Court of Cassation established that it is inadmissible for a party to rely on contradictory conduct by presenting a position in court that conflicts with the one previously held before the arbitrators.
French legal scholars have observed that, in the Golshani case, the institution was used in the form of *promissory estoppel*, as a method of reinforcing an informal understanding, in line with the general principle of equity.
Furthermore, the same author emphasized that, through the method of application of the rule by the French Court of Cassation, it functions as an instrument of procedural sanction. This is a response to the contradictions between the party's arguments during the proceedings and the reality outside the courtroom. As a result, an unjustified change in procedural position, contrary to the principle of good faith and to the detriment of the opposing party, must be sanctioned.
It is argued that the decision rendered by the French Court of Cassation represents a genuine application of the estoppel rule from a procedural perspective. The claimant's contradictory behavior functioned as grounds for the court to declare his action inadmissible, resulting in the dismissal of the claim. This approach, reflected in subsequent case law, operates as a method of sanctioning abusive claims and obstructing access to French justice. Such an intervention is justified by the goal of protecting the legitimate rights of the other parties involved.
Later, in 2009, through a decision of the Plenary Assembly, the French Court of Cassation decided to reserve the right, from a procedural standpoint, to review the conditions for applying the estoppel rule.
This decision was made in response to criticism within the legal community regarding the Court's inconsistency in clearly defining the criteria for determining the situations in which the rule should be adopted. The goal was to ensure predictable justice, given that the adoption of this solution results in a blockage of access to French justice.

In the *A. Sedea Electronique* case, the French Court of Cassation established specific criteria for identifying the situations in which the estoppel rule can be applied, limiting it to a "triple identity" of procedure, parties, and subject matter. Furthermore, the assessment of the trial judges was limited to the antagonistic conduct of the party, which must be of a nature to mislead the opposing party or even the judge.
Legal scholars have opined that, through the decision pronounced by the Plenary Assembly, the French Court of Cassation suggests the existence of a procedural principle of "prohibition of self-contradiction" derived from the estoppel rule. This principle may be sanctioned according to the intended purpose: it may result in a procedural bar (fin de non-recevoir) when the intent is to deceive. However, if the contradictions are "legitimate" — as an expression of the right to defense arising from the course of the proceedings — the party's position must be assessed based on the specific circumstances of each case.
Another important moment in the case law development of this rule occurred in 2010, when the French Court of Cassation proposed, in the field of arbitration, a definition of estoppel as a procedural behavior of one of the parties that represents a change in legal position capable of misleading the opposing party regarding its claims.
Through this decision, the principle was unequivocally extended to the field of civil procedure. Until that point, both legal doctrine and the case law of the Court of Cassation had described the existence of estoppel primarily in the context of contract law and private international law. However, it was argued that, since there was no explicit prohibition against self-contradiction in civil procedural law, one could not yet speak of a consistent and well-established judicial solution.

The gradual development of the concept was also reflected in legislative reform. In 2011, significant changes were introduced to the French Code of Civil Procedure through Decree No. 48 of January 13, 2011. This reform included the amendment of Article 1466 of the French Code of Civil Procedure, which now provides that: *"A party who, knowingly and without legitimate reason, fails to raise an irregularity in a timely manner before the arbitral tribunal shall be deemed to have waived the right to rely on it."*
Although the term *estoppel* is not explicitly used in the amended text, the explanatory report accompanying Decree No. 48/2011 clarifies its purpose: *"Article 1466 enshrines the principle of estoppel, already recognized by case law. This concept, borrowed from Anglo-Saxon law, constitutes a procedural exception aimed at sanctioning, in the name of good faith, contradictions in a party's behavior. The party is thus bound by its previous conduct and, consequently, precluded from asserting a new claim."*

## 3. THE SUBSIDIARY NATURE OF EQUITY-BASED JUDGMENT

The Code of Civil Procedure, in Chapter II, dedicated to the fundamental principles of civil proceedings, establishes in Article 5, paragraph (3), the judge's obligation to resolve a case based on the general principles of law and by considering the requirements of equity. This obligation applies in situations where the law does not provide for a solution, there is no established custom, or the law cannot be applied by analogy to similar situations.

This provision establishes a hierarchy of sources of civil procedural law in the following order: the law, customs or practices, the application of the law by analogy, and, as a last resort, the general principles of law, taking into account the requirements of equity. These principles underpin the regulation of civil proceedings. It is considered that the regulation of these principles in this form, within the preliminary title of the Code, was necessary, especially since the previous Code was deficient in terms of legislative technique. The principles were previously extracted from legal provisions that referred to specific situations rather than being stated as general principles.
Furthermore, in the field of arbitration, the legislator has aligned with most legal systems that allow the parties to opt for an equity-based judgment. Article 601 of the Code of Civil Procedure explicitly provides that the arbitral tribunal may adjudicate the case in equity, but only with the prior agreement of the litigating parties.
According to the doctrine, by proceeding with an ex aequo et bono judgment, arbitrators have both the right and the obligation to seek a solution that meets the demands of fairness. The optional nature of this procedure has clear advantages that outweigh the existing disadvantages (such as avoiding legal uncertainty, the risk to the interests of third parties who have relied or continue to rely on the system of legislative rigors, and the cultivation of a certain degree of unpredictability in legal relationships due to a solution that differs from the one envisaged in the contractual clauses).
Like any other arbitral award, an equity-based award is subject to annulment through the filing of an annulment action. This is because the clause on equity arbitration does not exempt the arbitral tribunal from the obligation to judge in accordance with the rules of arbitration. However, concerning the substantive legal relationship, it allows the arbitrators to derogate from the rules of law, seeking a solution on the merits of the case that satisfies the interests of the parties as they existed at the time of the agreement or during the course of the contractual relationship. Clearly, such a conventional equity-based judgment is only permitted for arbitral tribunals.
Under the provisions of Article 609, paragraph (1) of the Code of Civil Procedure, the parties are not granted the right to waive the possibility of exercising an action for annulment of the arbitral award before the award is pronounced, regardless of the arbitration formula chosen. Moreover, there is no incompatibility between the grounds on which an annulment action may be filed, as established by

Article 608, paragraph (1) of the Code of Civil Procedure, and a decision based on an equity-based judgment.
However, the arbitral tribunal cannot depart from mandatory legal rules when conducting an equity-based judgment. Such conduct would result in the annulment of the arbitral award, as stipulated in Article 609, paragraph (1), letter (h), final provision.
Thus, resolving a dispute in equity cannot disregard public order rules, such as the equality of the parties, the adversarial nature of the proceedings, the right to a defense, procedural rules concerning the pronouncement and reasoning of decisions, the tribunal's empowerment, or mandatory substantive rules of public order.
Legal doctrine has argued that not all mandatory legal provisions are irresistible in the face of an arbitral tribunal that resolves a dispute in equity. It is necessary to distinguish between mandatory public order norms, which protect general interests, and mandatory private order norms, which are designed to protect the interests of the parties to the substantive legal relationship.

We have doubts about the interpretation given by some reputable authors regarding the nature of the annulable arbitral award. This interpretation holds that the annulability of the award follows from the filing of an annulment action, regardless of whether the judgment was based on equity or on law, whenever mandatory legal norms are violated. The legislator does not distinguish between the types of protected interests. Since the grounds for annulment must be strictly interpreted and applied, we maintain that arbitrators are bound by mandatory rules, regardless of whether these rules concern only the interests of the parties. For example, an arbitrator cannot disregard the provisions of Article 1634, paragraph (6) of the Civil Code, a prohibitive mandatory private order rule that stipulates that, in the case of obligations concerning the return of fungible goods, the debtor cannot invoke fortuitous impossibility of performance. Similarly, Article 2252, paragraph (1) of the Civil Code provides that a debtor of a life annuity is not entitled to release themselves from the obligation to pay the annuity by refunding the principal and waiving the restitution of the amounts paid as installments.
Of course, the parties may expressly agree, taking into account their relationship, to waive a mandatory private order rule. In this case, the arbitrator will be bound by the parties' agreement and will have the opportunity to resolve the dispute in equity, without being obliged to observe those specific legal provisions.

## 4. APPLICATIONS OF THE ESTOPPEL THEORY BY ANALOGY IN ROMANIAN CIVIL PROCEDURAL LAW

### SUMMONS AND COMMUNICATION OF PROCEDURAL DOCUMENTS

Although Romanian procedural law has not formally or informally adopted this Anglo-Saxon theory, which later developed in French law — neither in arbitration nor in court proceedings — its particularities can be perceived in the way disputes are resolved. This occurs when a party exercises a right before a court or even an arbitral tribunal in contradiction to its previous behavior, contrary to good faith, and to the detriment of the opposing party.
Regarding equity-based arbitration, a pertinent question arises as to whether a party can renounce the clause in the arbitration agreement that provides for the resolution of the dispute in equity by the arbitral tribunal. What are the consequences of such an act of will on the party’s right to access a court to challenge the arbitral award? Could the judge hearing the action for annulment invoke, as a genuine estoppel, the contradictory conduct of the party and reject the annulment request as inadmissible? These questions open the debate on the recognition of the rule prohibiting self-contradiction in procedural law.

To answer the first question, we believe that the party is bound by the arbitration agreement. The fact that they opted for an alternative method of dispute resolution, with this particularity of equity-based adjudication, is a fundamental expression of the party's autonomy and the binding nature of the contract. Otherwise, the party could exploit the legal relationship to suit their own interests, seeking to have the dispute resolved "under the law" to the detriment of the initially agreed arbitral form.
Of course, one could imagine a scenario in which an action for annulment of the arbitral award is filed on the grounds that there was no express agreement at the time the arbitral tribunal was invested to resolve the case in equity. Such an argument could be based on Article 608, paragraph 1, letter b), or letter h), final clause, considering that the arbitral tribunal resolved the case while ignoring substantive legal norms.
We believe that, in such a situation, the court hearing the action for annulment of the arbitral award may invoke estoppel as a procedural bar (fin de non-recevoir) against the inconsistent conduct of the party, which disavows the previously agreed arrangement in pursuit of a subsequent interest, contrary to the requirements of good faith.
Moreover, a corollary principle of civil procedure is enshrined in Article 12 of the Code of Civil Procedure, which stipulates that good faith must characterize the exercise of procedural rights in accordance with their purpose and without prejudice to the procedural rights of other parties. Paragraph 2 of the same article provides for sanctions against the abuse of procedural rights, including the possibility for the abuser to be held liable for the damages caused. Additionally, a judicial fine may be imposed.
In specialized legal literature, the concept of good faith in the exercise of procedural rights — particularly the right to submit a claim for review by a court or to file appeals — is often contrasted with bad faith or abuse of procedural rights.
The concept of good faith originates from moral and canonical precepts, aiming to preserve a right in line with its purpose as established by secular or religious law. As noted, good faith can be seen as a legacy of the past, essentially called upon to protect moral and religious values in the effort to create a balance in legal protection.
According to Cicero's definition, good faith may signify sincerity in declarations (*veritas*) and loyalty or fidelity (*constantia*) in commitments.
The term "abuse of rights" has often been used to characterize excess, arbitrariness, selfishness, or malice in the exercise of rights recognized and protected by law. However, the law does not provide a precise definition of this concept. It merely describes it as conduct that runs counter to the principles of good faith. Moreover, the concept of good faith itself is not fully clarified, and attempts to define it are rare.
Based on how the general principle of good faith has been defined, it is clear that it opposes actions by a party that contradict its own commitments. This suggests disloyal behavior toward the opposing party, which seeks to empty contractual obligations of their substance or to mislead.
Another scenario that may be imagined as an application of the estoppel theory in Romanian civil procedural law, through the sanction of non-recognition of a right exercised contrary to good faith, involves the filing of an appeal that is dismissed as late, even though the challenged decision was not effectively communicated. This procedural defect was caused by the appellant's own conduct — providing a non-existent address for the communication of procedural documents.
In the given case, the appellate court found, upon examining the content of the initial claim, that the claimants had unequivocally indicated a procedural domicile to be used for the communication of documents. As a result of fulfilling the procedure for communication, it became apparent that the address provided was incorrect. However, the claimants had attended the scheduled court hearings without mentioning a new address for the receipt of documents. The court held that the claimants bore procedural fault for their failure to inform the trial judge of a new address for communication. The claimants did not invoke any situation that might have made it impossible for them to provide

such information. Consequently, the first instance's decision was deemed to have been legally communicated. Although the law does not contain specific provisions on the execution of the summons/communication procedure to a non-existent address indicated by the claimants themselves, the court considered their conduct to be culpable. This behavior was seen as an abuse of rights, as the claimants left the course of the proceedings (with respect to the appeal deadline) at their discretion.

We observe that the court's solution — which, although it prevents access to the appeal, reflects a mirror application of the *estoppel* rule in civil proceedings — sanctions the party's contradictory procedural conduct. The party sought to rely on an alleged illegality of the communication procedure, which was in fact caused by their own conduct. The party's intention was to mislead in order to exercise the right of appeal and to control the course of the civil trial (specifically, the appeal deadline) as they saw fit.

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# DIGITALIZATION AND CORRUPTION

***Marian I. Adrian Sorin, Lecturer Ph.D.***
*"Bogdan Voda" University, Faculty of Law, Cluj-Napoca, Romania*
email: *amarian08@yahoo.com*

**ABSTRACT**

*Progress has brought good things. Historical experience shows that mistakes have also been made. Cosmetics and medicines with radioactive substances. Digitization has involved a very large amount of trade. Digitization of education is contested by scientists. Politicians want digitization because there are big money profits. Corruption in digitization assumed two forms. A classic form in the sense of corruption offences. The second form of corruption is that of perverting the population. Behavioral changes and addictions appear, especially in youth, from normality.*

**KEYWORDS**

*Technological progress. School performance. Classical school. Digitalization of education. Smartphone appendage. Aggression explosion. Corruption in digitalization. Cocaine. Addiction.*

**JEL Clasifications:** K1, K14, K24

## 1.INTRODUCTION

It is broadly agreed that the term "digital citizenship" has a generic character and refers to several specific sections. Responsible access to digital resources, initiation and mastery of digital tools, and the physical and psychological conditioning of living with these resources are the most important sections.

Surely, technological progress implies an improvement in human life and existence, but some equipment and work procedures can carry adverse or negative effects. Historical examples support this view. When X-rays, Roentgen rays, and radioactive substances were discovered in the early 20th century, they impressed people so much that medicines (pills, suppositories) and cosmetics (face creams, hand creams, lipsticks) were made from them. People were fortunate not to be killed en masse because these products were so expensive that manufacturers merely claimed the medicines contained radioactive substances, but in reality, they didn't include them in the products.

Similarly, if the Anti-Covid vaccines had adverse effects, it's quite possible that Romanians were protected by the fact that there weren't proper storage and handling conditions with liquid nitrogen, and the implicated substances deactivated themselves, despite millions of excess doses being purchased for Romanians. Similarly, when cocaine was discovered, prominent doctors of the time, including Freud, recommended its consumption as medicine, promoting it as the best antidepressant.

We suggest that a discovery, a novelty, or the latest technology, which may carry a host of negative effects, should not be viewed as a sacrosanct element.

Another legendary warning has remained in history: "Young people today love luxury. They have bad manners, despise authority, and show disrespect toward elders. They no longer stand when older people enter the room. They contradict their parents, eat up delicacies at the table, cross their legs, and tyrannize their teachers. Young people today only think about themselves. They show no respect for parents or elders. They speak as if they know everything, and what we consider wisdom is irrelevant to them. As for the girls, they are forward, immodest, and unfeminine in language, behavior, and dress," stated Socrates (470 BC-399 BC). 2,400 years have passed…

The effects of social networks, very little studied, can be devastating. And there are differences and rankings in terms of negative effects among these networks. Some statistics show that Romania is the country with the highest percentage of people who get their basic information from the TikTok network. Among young people, Facebook is only the fifth most used platform.

In the rankings for the quality of education, specifically the PISA Tests, which are rarely discussed in our country because we dislike them, Romania has fallen to 58th/59th place, trailing at the bottom of Europe. Meanwhile, we are overwhelmed by projects on digitalizing education, promoting distance learning, and texts—not scientific studies—about the advantages of digitalization in education and all other fields. These texts are promoted by controversial figures, often politically connected semi-educated individuals.

We have among the highest internet speeds, we were pioneers or experimental ground for 5G technology, yet we are at the bottom of the PISA Tests rankings.

We dare to suggest that this avalanche of advertising and rapid digitalization efforts is weighed down by the phenomenon that plagues many actions related to public procurement and projects, namely corruption.

## 2. ABOUT CORRUPTION AND ITS CONNECTION TO THE EFFECTS OF DIGITALIZATION

As an "umbrella" term, corruption represents a deviation from morality, honesty, and duty. Being a reflection of the relationship or interaction between authority and citizens, corruption is also defined as the discretionary use of a position or office and the resort to illicit or illegal means aimed at gaining personal or group interests.

For an act of corruption to constitute a crime and, consequently, be subject to criminal law, it must meet the requirements stipulated by the criminal law.

The most important ones are:

- the crime of accepting bribes – provided in Article 254 of the Penal Code,
- the crime of offering bribes – provided in Article 255 of the Penal Code,
- the crime of receiving undue benefits – provided in Article 256 of the Penal Code, and
- the crime of influence peddling – provided in Article 257 of the Penal Code, and they are punished according to these legal provisions. Additionally, we mention Law no. 78 of 2000 for the prevention, detection, and punishment of corruption offenses.

In this material, we will address the effects of digitalization in connection with the broader social phenomenon of corruption, especially since in its strict legal sense, the phenomenon is investigated and handled by specialized institutions.

### 2.1. Positive Effects of Digitalization in Combating Corruption

No one is against progress and digitalization. Digitalization itself certainly has beneficial effects, including in the area of corruption. It is well known that a bureaucratic and cumbersome service fosters corrupt behavior. It is said that a long line at any counter attracts corruption, and digitalization can play a decisive role in eliminating those lines.

Another positive effect in combating corruption is that digital systems can be used to monitor and uncover financial transactions, ensuring greater transparency. On the other hand, new digital payment methods, such as those using cryptocurrency technologies, can hide bribe payments.

### 2.2. The National Effort for Digitalization and Major Corruption Cases

Digitalization involves the buying and selling of hardware and software products, and the financial dimensions of these transactions, as well as the economic power of some parties, have entered the criminal sphere in many cases.

Over 1,000 IT projects have been funded to modernize our country. While in the 1990s foreign companies were dominant, starting from the 2000s, powerful Romanian economic partners began to emerge, securing contracts with the state.

The most mentioned names, in order of the amounts collected, are: **Siveco Romania**, a company founded by Irina Socol, which at one point was ranked first with 62 contracts won from over 40 institutions. In second place is **Tiberiu Urdăreanu**, a former army officer with 25 contracts with 15

authorities, excelling in surveillance systems. In third place is **Sebastian Ghiță**, with 26 contracts with 17 major public institutions.

All three have had legal problems. They were either convicted of tax evasion, faced legal action, or were put under criminal investigation for corruption offenses.

While criminal activities fall under the jurisdiction of competent and specialized structures, there are aspects of digitalization implementation that have been less discussed and which we believe will have more severe and harder-to-quantify long-term negative effects.

## 3. DEVIATIONS FROM NORMALITY. THE PROSTHETICS OF HUMAN INTELLIGENCE

### 3.1. Computer Dependency is Not Mandatory, but It Is Imposed

"Digital environments make us use our brains less, and its efficiency decreases over time… This does not only refer to our thinking but also to willpower, emotions, and especially social behavior. The effects have been demonstrated from various perspectives and occur under mechanisms that scientific research has increasingly identified, particularly through neurological research" (Spitzer, Digital Dementia, pp. 280-281).

Humans, as divine sparks and evolutionary results, were formed to learn, love, and create "in the flesh." In terms of educational digitalization, we rank alongside Nigeria and Rwanda. In school quality, we occupy the position set by the PISA Tests, specifically 58/59, along with the quality of the millions of useless tablets purchased for schools and the billions wasted.

Very few educators in our country are raising alarms about this. An example is the historian and writer from Iași, Mircea Platon, through his work The Educational Comintern and Digital De-schooling.

"Why this uniformization? Why does the Ministry of Education (MEC) plan 'training courses for parents' and why is 'the goal for 2027 that 90% of the country's population will be digitally literate'? How can MEC ensure that 90% of Romanians will be digitally literate? By using the digitalization of schools as a lever for a huge social engineering mechanism? Has this become the role of schools? Has MEC become a kind of Ministry of Propaganda and Uniformization? In the days when students wore uniforms, schools were more humane than today, when, under the guise of the ideology of all kinds of diversity, parents and children are subjected to the most despotic and humiliating forms of manipulation and dumbing down" (Mircea Platon).

"Introducing computers into schools will prepare students for life alongside computers, as if students should have lessons in drinking, smoking, and sex, all rational, controlled, under the supervision of the teacher (just as promised with computers) to teach students about these constants of adult life. In reality, computers intrude so deeply into all fibers of our lives that schools should be an oasis where children are protected from this influence, just as adults need time spent away from screens. A combination of TV/tablet/laptop/chat/movies/school projects/homework causes today's children to spend 6-7 hours a day with their eyes on screens (outside of school), and colonizing their school hours with screens will have disastrous effects on both them and us as civilized humans," says Mircea Platon.

Moreover, the digital environment is designed to create user dependency. In the documentary The Social Dilemma, from minute 22:10, Tristan Harris, who worked for Google, explains how he was academically trained to discover vulnerabilities in the mind and build a manipulative universe with the help of digital technology, investing everything he knew about the psychology of persuasion. Harris was trained to become a "behavioral manipulation genius" through digital technology: "Harris says: Persuasive technology is actually a kind of design taken intentionally to the extreme, with which

we actually want to change someone's behavior. We want to make them do this. We want to see them keep clicking the mouse.

### 3.2. The Multiple-Choice Exam is Not Humanity's Best Friend, but the Computer's

"There will always be 'experts' paid to shame you for not keeping up with 'others,' who represent 'progress,' or to tell you that a certain technology is exactly what you need to be younger, more beautiful, smarter, immortal. In an economic world dominated by lobbyists financially supported to advance the interests of IT companies even against your interests – as a client, user, or supposed 'beneficiary' – you don't need to be a proponent of 'conspiracy theories' to think carefully about the millions of overt or subtle advertising messages seeking to manipulate or impose policies on us."

The audiovisual bombardment from bright screens has increasingly devastating effects, especially on younger clients/students. All school information will seem outdated and old-fashioned compared to the multitude of intense sequences strongly accompanied by sound and visuals from screens.

The lack of responsibility towards the quality of education, in connection with digitalization, manifests primarily through three main pillars:

1. **Replacing Direct Communication**: Excessive use of groups, without "hygiene" rules in this behavior, is replacing direct communication between teachers and students, or among students themselves. For example, there have been cases where explicit sexual scenes were posted on these groups, starting from primary school.
2. **Abuse of Remote Learning**: Remote learning methods are being abused, including the commercialization of remote tutoring. Attempts at TELE-SCHOOLING were made 40-50 years ago. The effects were so unfavorable that it was abandoned a few decades ago. Commercial conditions and the economic power of IT are leading us back to this form.
3. **Widespread Use of Multiple-Choice Evaluation Systems**: There is a saying in education, "Multiple-choice tests create monsters!" Solving problems of any kind produces strong and responsible individuals. Abuse of multiple-choice questions creates little monsters focused on minimizing effort and finding ways to avoid work.

Certainly, multiple-choice exams have their advantages, especially for the examiner, but not for the educational institution's product, which should be a well-prepared graduate!

### 3.3. Organic Appendage to the Smartphone

The contemporary fear is that we will produce generations of people who are merely organic appendages to smartphones. (Appendix for victims of the new school: a small extension of the intestinal tube, long considered useless, recommended for removal / A secondary part of an organ, an extension of it).

The technological avalanche overwhelms us, and we, Romanians, have a serious tendency to make light-hearted jokes, in the style of the film "Amintiri din Epoca de Aur," or to dismiss the phenomenon with frustration and caustic remarks like "Facebook and social networks are a mess." It's more than just a mess; it is reality!

The situation is much more alarming than a Dâmbovița or Napoli-style joke. Current generations of youth are changing, and we do not know how, nor are we informed or warned; we might suspect, but we are not addressing the need to develop mechanisms to protect and adapt ourselves.

It is positive that there are still (few) Romanian intellectuals, such as historian Mircea Platon from Iași, who are issuing warnings.

There are already works addressing the topic – such as "Children and Bright Screens" or "Digital Dementia!" There are certainly more, but the avalanche of change is faster than the studies being conducted. Where studies are done, in our case, the situation is different! Aggressive promotion

of critical issues (such as the abuse of digitalization in schools) is driven by semi-educated individuals in pedagogy, psychology, or sociology.

For example, in the U.S., the report "Increase in Criminality Due to Television!" was published in 1953. TVR in Bucharest began broadcasting only in 1956. The West did not solve the problem but warned its population.

Some boast about the digitalization of the country? Others argue that it's more about dumbing down than digitalizing.

In Romania, there are wonderful and worthy people who will undertake the digitalization of education for the nation's empowerment, not its disruption. However, be aware that the financial and corrupting power of global IT (does anyone remember SIVECO?) is much greater than that from juices, alcohol, or cigarettes. But compared to drugs? Even the drug industry's turnover doesn't compare…

That is, IT companies also need to sell, to make a profit, and in all fields, those who sell expensive, "cheap" products of questionable quality, rudimentary, and of low value win the most.

The most efficient way to sell is to offer poor-quality goods at high prices to less educated people. For example, no one reacted when on PRO-TV (think freely?) some years ago, footballers Rădoi or Bănel Nicoliță, following an opinion poll on "Who is the most important Romanian?" occupied higher positions than Iorga or Hașdeu!

### 3.4. From Joke Creators to Obscenity on Social Networks

It is known that there were groups of specialists, humorists associated with the Securitate (Romanian secret police) who crafted or shaped jokes during the "Golden Age" of Ceaușescu's regime. These jokes seemingly criticized or mocked Ceaușescu or the archetype of the communist/security officer, but the final image was one of sympathy towards the character. The mockery of major issues has persisted with us.

In contrast, elsewhere there is no laughter at the unknowns of manipulation threatening younger generations. To illustrate, we quote a fragment from one of the most prestigious Western publications:

"We have a generation of young people on social media so terrified of having the wrong opinions that they have robbed themselves of the opportunity to think, learn, and grow," wrote Adichie. "I have spoken to young people who tell me they are terrified to tweet anything, that they read and reread tweets because they fear being attacked by their own peers. The presumption of good faith is dead. What matters is not kindness but the appearance of goodness. We are no longer human beings. We are now 'angels' playing to outdo each other. God help us! It is obscene." (https://www.theguardian.com/…/chimamanda-ngozi-adichie via Mircea Platon)

In this context, do we have any wrong opinions here? In response, we can only mention that globally recognized IT geniuses, such as Bill Gates and Steve Jobs, allowed their own children access to information gadgets only from the age of 18. Yet, they sold well! And the best sales deals are made with which type of buyers? With those less educated. Does this relate to the evolution of Romanian students in the Pisa Tests?

## 4.DEVIATION FROM NORMALITY THROUGH AGGRESSIVENESS

### 4.1. Mechanisms and Levers for Increasing Aggressiveness

We observe changes in aggressiveness on the roads, in the streets, and in homes. We quantify it institutionally by the evolving operational situation (although the number of offenders discovered and investigated by the police is increasing), amidst a notorious "export" of criminals of all ethnicities across the European Union. The severity and trend of criminal age are also alarming.

If the relationship between Television and criminality has been studied, it is not hard to imagine the impact of various social networks where there is no editorial control over what is published.

Two elements contributing to the explosion of aggressiveness are:

1. Intensification of anxiety
2. Desecration of horrors

I have mentioned two of the most frequently cited levers influencing the population due to the explosion of aggressiveness and the avalanche of media violence.

Naturally, the increase in the feeling of anxiety, the "pressure cooker" effect produced by the avalanche of violence, and the subsequent exaggerated, violent reactions to external impulses. A person thus "treated" can act like an over-inflated balloon when subjected to a pinprick of aggressiveness—explosive!

The second lever is the desecration of horrors, creating a normalization of violent events in daily life. Repeating such events becomes routine and acceptable! Everyone, but absolutely everyone, is influenced—though to varying degrees. The most vulnerable are those with psychological instability and, unfortunately, our future, the children!

**4.2. Non-Stop Violence on Social Networks**

Just listen to the horns of younger drivers! Accidents, crimes, rapes, explosions, avalanches, earthquakes, wars—an endless litany of disasters, an inexhaustible source of terror: 24 hours a day, 365 days a year. We have become so accustomed to the sensationalism of mass media and social networks that violence has become monotonous, circular, banal—a mere statistical exercise: “Let’s see, what do we have today?”

A prisoner kills his cellmate by smashing his head against the wall, a mother drowns her five children, dozens of victims in a train accident?

In the world of violence, there are no breaks: the biggest surprise would be to open your smartphone, turn on the TV, or check your social media account and NOT find a report about some new atrocity. Unfortunately, this is an impossible dream; the game continues endlessly, and zero does not appear on the roulette of horrors.

Bombarded daily with shocking reports, violence has become trivialized, it has lost its allure and its seductive power. Continuously drugged with virtual violence, we have become insensitive to real violence, to the immediate violence within us. It manifests in all areas, even if we do not consciously perceive it.

There are music genres where only rhythm, drum volume, or guttural growling predominates. These dumbifying texts lead to primitivism and aggression. If we allow our children to be exposed to these influences, the result is predictable.

**4.3. The "Progress Witnesses" Sect**

Eminescu, Sadoveanu, Slavici, Coșbuc—outdated figures. Vulcănescu, Magda Isanos, Mircea Eliade, Emil Racoviță, Steinhardt—unknowns. The Church, an organization that undermines the goodwill and honesty of politicians to build hospitals and highways. Later, extremist and populist characters, whose rise to the national or European Parliament astonishes us, will be the ones voting.

The hidden reality of the degradation of Romanian education is explained by Mircea Platon in "Cominternul educațional și deșcolarizarea digitală!"

“There exists a sect of Progress Witnesses, ready to swear that 'Sadoveanu is outdated!' 'Creangă is outdated!' 'Eminescu is outdated!' 'Teaching/learning is outdated,' 'handwriting is outdated,' 'chalkboard writing is outdated,' and that beauty and goodness are outdated notions—useless.”

This is how the important and necessary plea of the historian, Mircea Platon, Editor-in-Chief of "Convorbirile literare" in Iași, begins.

There are studies—not just statements from politicians—that should be known and read by all those who do not consider the concept of mother and father outdated and who cannot be replaced by the terms "parent 1" and "parent 2." By all those who feel and know the difference between being raised under the guidance of true teachers or having generations of children abandoned to smartphones, with high chances of turning into a population of superficial thinkers.

*The classical school*, which Romania enjoyed from 1864 to around 1995, was a place where students cultivated their intelligence and moral discernment through contact with the best of the nation's and humanity's intellectual tradition.

*The politically correct school* tends to be a place where both parents and students are educated in progressive trends, based on the abandonment of any classical heritage and stable references.

It is a place where, under the pretext of educating students, radical ideology is also radiated into families. Indeed, it seems that, under the guise of educating students, it is the teachers who must continually learn and be re-educated.

The goal of the *new, active, experimental, and progressive school* is to continuously educate the teachers, enrolling the entire society into a never-ending indoctrination process.

(…) I do not understand why these reformers do not accept the idea of leaving the classical education system in peace, of consolidating it, and creating another educational path (no matter how digitalized they want it), like vocational schools for corporations.

Why the need to destroy the entire education system? Why this uniformity? Why does the MEC strategy include 'parent training courses' and why is the goal to have 90% of the country's population digitally literate by 2027? How can MEC ensure that 90% of Romanians will be digitally literate?

Using school digitalization as a lever for a gigantic social engineering mechanism? Has this become the role of schools? Has MEC become a sort of Ministry of Propaganda and Uniformity?

In times when students wore uniforms, the school was more humane than today when, under the guise of diversity ideology, parents and children are subjected to the most despotic and humiliating forms of manipulation and dumbing down. (Mircea Platon)

Of course, no one is against progress and informatization. However, as a divine spark and evolutionary result, humans were formed to learn, love, and create "live."

In the realm of educational digitalization, we rank alongside Nigeria and Rwanda. In terms of school quality, we are at the level fixed by PISA tests, at 58/59, in line with the quality of the millions of useless tablets purchased for schools and the billions wasted in vain.

Let's not forget: children and students no longer compete even in "clothes," but in smartphones and the novelty of installed games/apps.

Initially, Dr. Freud recommended cocaine as an antidepressant, but he and humanity later discovered how harmful cocaine and other drug dependencies can be. Laws and justice systems were created to combat drug use!

As ordinary citizens, paraphrasing perhaps the most famous shot Romanian, we might ask ourselves if there is something worse than drugs. Isn't it time to develop laws, norms, and create specialist structures to help people, especially children, avoid being too affected by this scourge of addiction to games, the internet, social networks, and smartphones?

In the public space, there is a tendency to explain the goodwill with which we should view technological progress, aviation, cars, and other discoveries.

More people die on the roads than in wars, and even airplanes crash. If we raise the issue that deaths from traffic accidents are a concern, does it mean we do not love cars and technological progress, including smartphones?

Certainly, with a little advertising from "technologies," arguments take on different consistencies and forms.But the most affected are children and students, who are the most defenseless and least reactive.

## 5. IN PLACE OF CONCLUSIONS

A German university psychiatrist, Manfred Spitzer (in his book *Digital Dementia*), claims that German politicians view and treat children/students merely as profit-generating entities. In Germany! We can only wonder if these Romanian students and children, who have been forced to spend about 10-12 hours a day staring at phones and screens for years, attending online classes and completing assignments without much supervision or value, should not also be respected and considered more seriously?

In Romania, there is a law against smoking (which is timely and welcome) and regulations against alcohol. Old addictions/dependencies are insignificant compared to the new ones, both in terms of virulence, aggression, prevalence in the population, and, most importantly, their future implications.

We return to some PC games: shooting soldiers, killing dragons and monsters in brightly colored screens with aggressive music and unknown subliminal messages. Compared to the internet, what the school might still offer seems old-fashioned, outdated, and boring. We love technology, but we must use it to our advantage and not become slaves to the desires of corrupt officials who procure useless (and low-quality) equipment.

We, as over-busy parents, fulfill our duty by giving a smartphone as a gift. After that, we are unsure about what happens with the soldiers on the screen, but we risk creating a few generations of unqualified workers (the so-called "sparangheliști").

Any normal person (we hope we are among them) respects, uses, and loves technological advancements and novelties. The smartphone is relentlessly indispensable! The negative phenomena accompanying it are not premeditated by a global conspiracy, but they are so threatening that an old-school definition comes to mind: “The state is an organization that emerged as a necessity in historical evolution to protect citizens from internal and external enemies and from the vicissitudes of nature!” What is the state doing to protect us?

If the state does nothing, we must remember the famous words of J.F. Kennedy: “Ask not what your country can do for you, ask what you can do for your country!” Perhaps this country also needs help.

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# Contributors in this Issue

**Curtis Cordon**, ***Ph.D.,*** is the Lieutenant Colonel, United States Air Force Executive Officer for the United States Military Delegation to the NATO Military Committee. *email:* curtiscordon@gmail.com

***Gheorghe Bunea, Senior Lecturer Ph.D.,*** is the current Dean of the Law School of the University of Bogdan Vodă University. He is a founding member of the Romanian Society of Criminology and Criminalistics - Transylvania Branch and Executive Secretary since 1994. He is also Member of the Association of Criminalists of Romania and one of the founding members of the Rotary Club of Cluj-Napoca (USAMV branch) since 2002. He is also the author of over 50 scientific works and articles. email: *buneagheorghe@yahoo.com*

***Ioan Marius POP, Ph.D. candidate,*** is a graduate of "Alexandru Ioan Cuza" Police Academy, class of 2001, anti-drug specialist officer, Head of the Anti-Drug Service within the Organized Crime Brigade Cluj-Napoca between 2011 - 2021, currently an officer specialized in combating cross-border crime within the FRONTEX Agency. email: *i.marius.pop@gmail.com*

***Eva Aqui, Senior Lecturer Ph.D.,*** is the current Department Director of the Faculty of Physical Education and Sports at Bogdan Vodă University of Cluj Napoca. She finished her Ph.D. studies at the University of Miskolc, Hungary. She is a Distinguished Member – recognized for support of the Society's principles of Peace-Education-Accomplishment-Charity-Equality, acordat de International Society of Poets, 2001, USA, which also gave her The International Poet of Merit Award nineteen ninety-five. email: evaacqui@yahoo.com

***Bandiciu Bene Corina Anca, Lecturer Ph.D.,*** is a certified public accountant specializing in accounting through software programs, documenting economic transactions over a management period, preparing and submitting tax declarations on time each month, and preparing annual financial statements. She teaches courses and conducts seminars in the subjects of Accounting Basics, Financial Accounting, Management Accounting, and Financial Audit at Bogdan Vodă University in Cluj-Napoca. She also supervises undergraduate and master's students in their thesis and dissertation work in the field of accounting. email: corinabene@yahoo.com

***Grigoraș Petru, Lecturer Ph.D.,*** Faculty of Physical Education and Sport. Specializes in sports activities, sports event organization, sports management, and education in the field of recreational sports. email: grigoraspetru@gmail.com

***Milon Alexandra Gabriela, Lecturer Ph.D.,*** is a lecturer at "Bogdan Vodă" University in Cluj-Napoca, where she shares her knowledge and passion for physical education and sports. She graduated from the Faculty of Physical Education and Sports in Bacău in 2005 and completed her studies with a PhD at the University of Pitești, Faculty of Physical Education and Sports, in 2013. Currently, she holds the position of President of the Coaches' College within the Romanian Badminton Federation, actively contributing to the development of this sport. Her academic and professional experience recommends her as a valuable leader in the field of physical education and sports.email: milon.alexandra@yahoo.ro

***Sabău Gheorghe, Lecturer Ph.D***., Theory and Methodology of Physical Education and Sport, Practice and Methodology of Motor Activities by Age Groups, Rugby - Theory and Practice, Kinesiology. email: gsabau05@yahoo.com

***Gorgan Carmina-Mihaela, Associate Professor, Ph.D***., Bogdan Vodă University of Cluj-Napoca, Faculty of Movement, Sports, and Health Sciences, Department of Physical Education and Sports Performance. email: carminagorgan@yahoo.com

***Milon Bogdan Traian, Lecturer Ph.D.,*** is a distinguished educator at the Inochentie Micu Greek-Catholic High School, where he contributes to the formation of the younger generation. In addition, he is the coach of the national senior badminton team, demonstrating his expertise and dedication in the field of sports. He also holds a position on the Board of Directors of the Romanian Badminton Federation, influencing the development of this sport at the national level. Milon Bogdan graduated from the Faculty of Physical Education and Sports in Bacău in 1998, thus consolidating a successful career in education and sports.

***Cârlan Sergiu Nicolae, Lecturer Ph.D.***, „Bogdan Vodă University" of Cluj-Napoca, Faculty of Law. Has extensive experience in areas such as justice auditor, judge, member of the Management College of the Cluj-Napoca Court, spokesperson for the Cluj-Napoca Court, President of the Civil Section. email: sergiucarlan@ymail.com

***Marian I. Adrian Sorin, Lecturer Ph.D.*** „Bogdan Vodă,, University, Cluj-Napoca - Faculty of Law; Quality Management in the Public Order and Safety System. email: *amarian08@yahoo.com*


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