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CONTENTS

Incorrect posture in Albanian children

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Abstract
The incidents of incorrect posture have increased these last two decades, especially in school age children. Most of the studies have highlighted Scoliosis as one of the most frequent incorrect postural shapes among school age children.
Based on this, through our study we aimed to evaluate the prevalence of the incorrect posture shape in Albanian children.
In our study participated 308 children aged 10-13 years (n = 151 girls, n = 157 boys) who were randomly selected from public schools of Tirana. To evaluate the prevalence of Scoliosis, Kyphosis (thoracic region) and Lordosis (lumbar region) in children we analyzed the *children's posture shape* in *Anterior and Lateral View* by using ***Postural Analysis Grid Chart and Posture Screen Mobile®-PSM (iPod)***. During the postural test children were less wearied in order to provide detailed data about their posture shape. For the statistical analyze we used **"IBM SPSS Statistics 20"** selecting Descriptive & Frequency Analyze.
In our study Scoliosis resulted at 11.03% of subjects while Kyphosis (thoracic region) and Lordosis (lumbar region) in 3.57% and 6.49 % of the subjects. In addition to that, results showed that the prevalence of Scoliosis by gender was 12.7% in boys and 9.3% in girls, while Kyphosis (thoracic region) was 5.7% in boys and 1.3% in girls and Lordosis (lumbar region) 7.3% in girls and 5.7% in boys.
Based on these results we highlight that incidents of incorrect posture occurred even in Albanian school age children. Scoliosis, even why is detected more in boys, seems to be present at both genders. It is obvious that children aged 10-13 years posture is affected even by Kyphosis, which is more prevalent in boys, and Lordosis that appears more in girls.

Keywords: *Incorrect Posture, 10-13 years old, Children, Scoliosis, Kyphosis, Lordosis.*

Introduction

Our daily life habits changed a lot as consequence of modernization process which has unfortunately modified in negative way the posture shape of human being. To restore a new balance in accordance with these changes human body performs several compensatory actions which often become the reason to occur incorrect posture. Because of that "Incorrect Posture" not only becomes one

of the most studied issues by many scientists but, its incidents have recently increased especially among young generation. (Motow -Czyz et al., 2014; Brianezi et al., 2011, Balamurugan, 2014)

The human body is changing throughout life, but the greatest challenges are recorded during puberty when posture as a result of the dynamic changes appears to be more flexible. In addition to that posture can easily be modified even from negative factors such as: *standing for hours in front of computers or video games, the way they seat in class, how they do homework, heavy school bags or ways of holding the bag, using urban transport, unhealthy food, low level of physical activity or wearing uncomfortable shoes*. The degree of postural deviations may deteriorate more if these negative factors influence continuously and for a long time. So we emphasize that being aware of "negative factors" or "health problems" that postural deviations can cause over time, have a special importance to challenge this phenomenon.

There are several health problems that children may face especially if their posture displacement is not corrected in time and affects their posture shape for a long time such as: *insufficient circulation in the brain (forward head); breathing difficulties (kyphosis), malfunction of heart (kyphosis and scoliosis, both of them); stomach inflammation or nausea (rounded shoulders reducing space between sternum and pubic bone).* (Wiggins & Victoria, 1931: Loveless, 1999; Dickson, 2004) There are evidenced that most of the postural deviation are caused by "lack of information" about posture.

By many researchers, the ability to keep the body straight during dynamic and static movements is considered as a relative relationship between the different parts of the body in order to keep it upright. (Bloomfield et al., 1994; Norris, 2000; Kendall *et al.,* 2005; Penha et al., 2005)

Posture is considered too as a behavior that is performed mechanically which can easily be modified and affected by various actions or habits. (Kratenova et al., 2007)

Having a "good posture" means also having a muscle balance in order to protect the supporting structures of the body against injury or progressive deformation. (Bloomfield et al., 1994; Norris, 2000)

These last two decades is identified that young generation is frequently attracted by the use of electronic devices *(eg: Mobile, iPad, video game act)* which is identified to affect the upright standing that professionally is called "Posture". (Tremblay & Willms, 2000; Banfield, 2000; Misra et al., 2012)

This evidence are revealed even by another author who emphasized that children, who were spending 14 hours a week watching television or playing video games, had the highest probability of incorrect posture occurrence. (Kratenova et al., 2007)

Furthermore, it is observed that a significant relationship exists between body weight and lumbar lordosis; how to do homework and thoracic kyphosis, sitting position or the way they hold school bag and scoliosis. (Minoo *et al., 2013)*

After a detailed review of the poor posture prevalence among children we identified a variety of reports about the incorrect posture level.

This variety comes out because of different postural tests used by each author and the age groups were the studies were focused on. (See Table 1)

Table 1. A review of incorrect posture results among children.

AUTHORS	SKOLIOSIS	KYPHOSIS	LORDOSIS	SUBJECTS	AGE
Bueno & Rech, 2013	33,2%	16,6%	27.9%	864	8-15
Kratenova et al., 2007	50%	31%	32%	352	7, 11, 15
Stroebel, 2002		57%	70%	168	11-13
Sedrez et al., 2015	47.4%	50.8%	32.2%	59	7-18
Protic-Gava et al., 2011		32.8 %	58.2%	55	10-13

Scoliosis has been one of the most postural deviations studied because the youth asymmetry body was the most frequent symptoms recorded in those years. There are evidences that girls are more affected by this incorrect posture shape than boys (1.5: 1). (Kane and Moe, 1970)

But from another study resulted that 1.18% of subjects have scoliosis and there isn't any difference regarding scoliosis' incidents between girls and boys (1:1). (Karachalios *et al.,* 1999)

This unnoticed gender difference resulted also at Protic-Gava's study, who emphasized that although girls were identified with the incorrect posture more than boys, the difference between them was not significant. (Protic-Gava et al., 2011)

Bueno and Rech in their study highlighted that the most common postural deviation is scoliosis and the age 8-12 years is identified as the "critical" age for hyperlordosis but not favorable for dorsal kyphoses. (Bueno & Rech, 2013)

Having a good posture for children is very important for their wellbeing because the pain that postural displacement can produce. (Stroebel, 2002) There are several health concerns that children may face especially if their posture displacement is not corrected in time and affects their posture shape for a long time such as insufficient circulation in the brain, respiration difficulties or nausea. (Wiggins & Victoria, 1931: Loveless, 1999; Dickson, 2004)

Aim: Based on these data we decided to investigate and evaluate the prevalence of incorrect postural shape among our school age children.

Methods

In our study participated 308 children aged 10 -13 years who were randomly selected in public schools of Tirana. Postural deviations diagnosis was conducted on a contingent of **308 children** aged **10-13 years** (n = 151 girls, n = 157 boys)

To evaluate postural shape of children we used **Postural Analysis Grid Chart** applying **"Posture Screen Mobile®".** Children were photographed near to **Postural Analysis Grid Chart.** In order to provide appropriate postural assessment children were lightly wearied.

The 308 photos made in Anterior and Lateral View were transferred to the software of **Posture Screen Mobile®** to analyze in details their postural shape. This new application is revealed in 2010 by Dr. Joe Ferrantelli, an orthopedic graduated in Life University.

Statistical Analyze

To analyze the collected data statistically,

we used **"IBM SPSS Statistics 20"** selecting **Descriptive and Frequency** analytical techniques. In this statistical analyze we used several variables such as *angle of posture displacement (in total*) (Anterior & Posterior plan) to identify **scoliosis** and *averaged lateral angle of "shoulder" and "hip-pelvis" displacement* to identify **kyphosis and lordosis.**

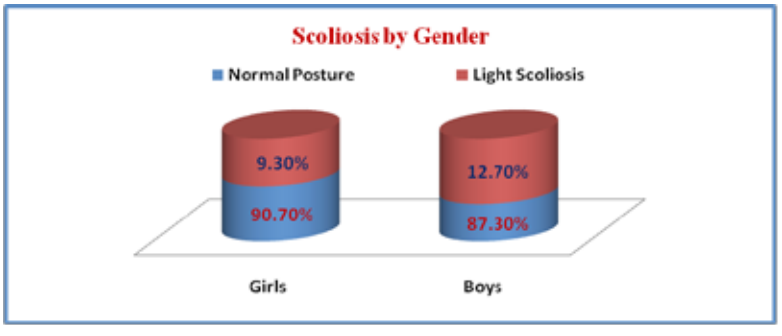
Results

Table 1 show that from 308 participants there are *49.03 % girls and 50.97 % boys and their mean age is 11.5* years old.

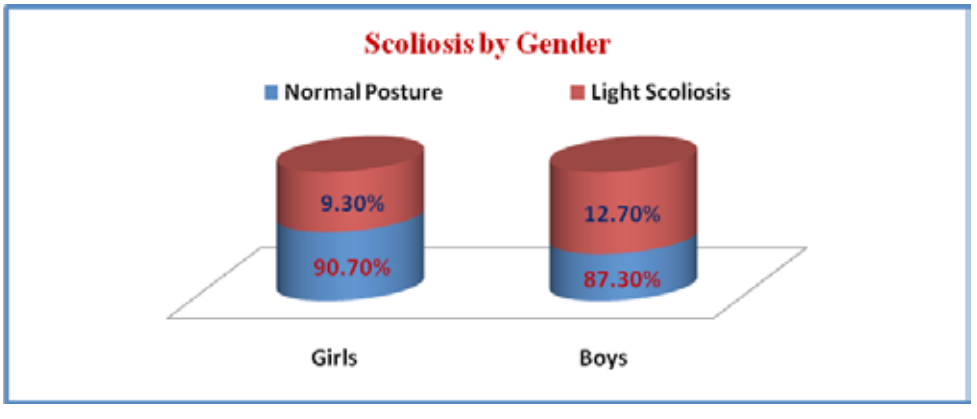
Table 1. Participants by gender and age.

Age	Gender	Frequency N	Percent %
10.00 N=77	Girls Boys	43 34	55.8 44.2
11.00 N=86	Girls Boys	39 47	45.3 54.7
12.00 N=104	Girls Boys	48 56	46.2 53.8
13.00 N=41	Girls Boys	21 20	51.2 48.8
Girls = 151 / Boys 157			

Results show that children aged 13 years (19.5%) are more affected by light scoliosis. Also, it is shown that 11.03% are affected by light scoliosis. (See Graph1.)

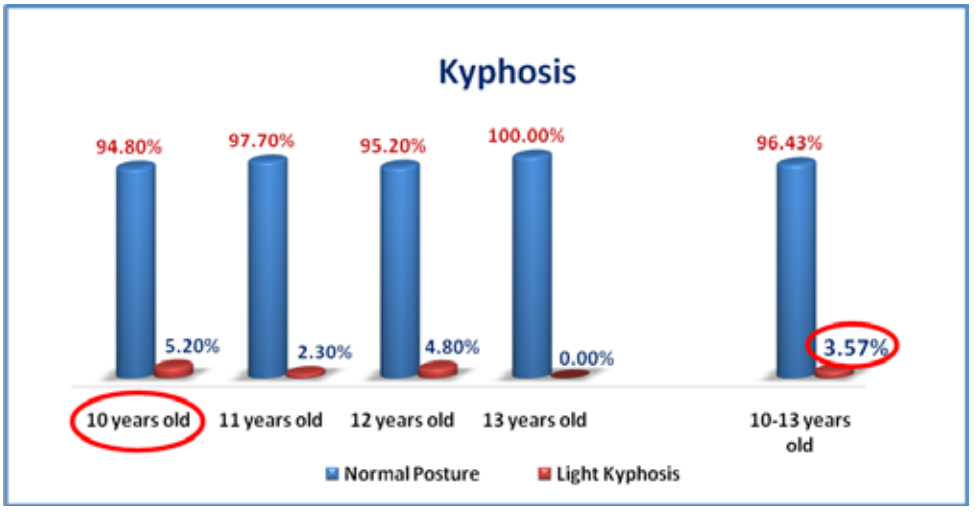


Graph.1. The prevalence of scoliosis among children aged 10-13 years.

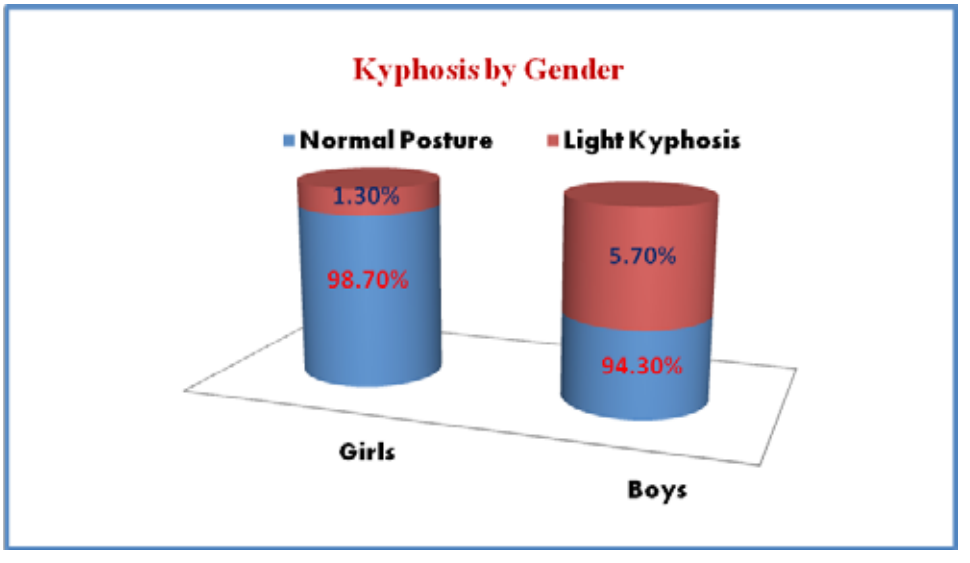


Graph.2. Prevalence of scoliosis by gender.

While in **Graph 2** it is noted that results on scoliosis prevalence by gender show that light scoliosis is manifested mostly in boys (12.7%) than girls (9.3%).

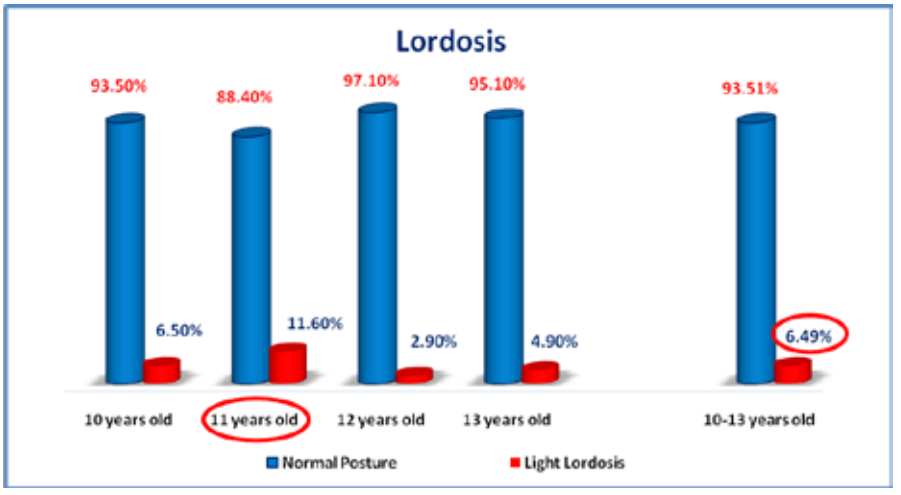


Graph.3. The prevalence of Kyphosis among children aged 10-13 years.

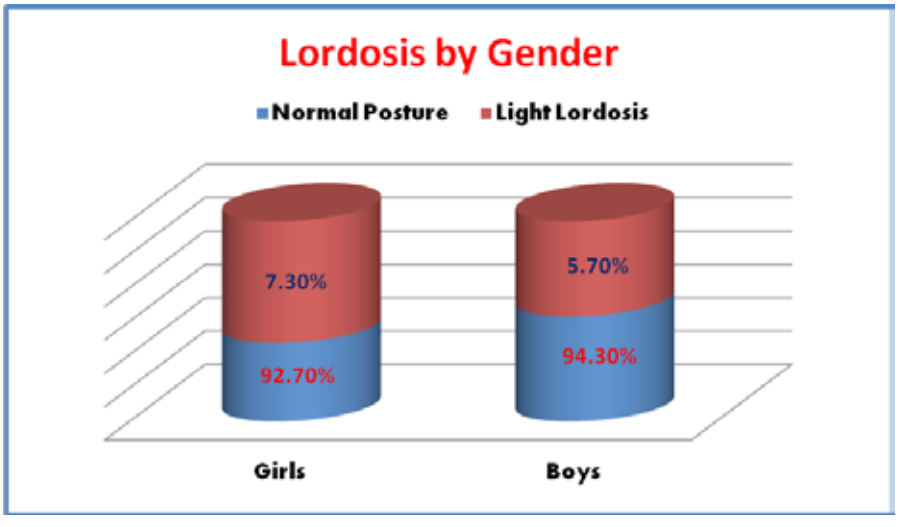


Graph.4. Prevalence of kyphosis by gender.

Graph 3 shows that the prevalence of kyphosis in total is in 3.57 % of subjects and more prevalent in children aged 10 years while in **Graph 4** it is clearly shown that boys (5.7%) are more affected by kyphosis than girls (1.3%).



Graph.5. The prevalence of Lordosis among children aged 10-13 years.



Graph 6. Prevalence of lordosis by gender.

From **Graph.5** it is noticed that 6.49% of children are affected by lordosis which is more prevalent among children aged 11 years (11.6%). While in **Graph 6** it is clearly shown that girls (7.3%) are more affected by lordosis than boys (5.7%).

Incorrect Posture	10-13 years old	Girl	boy	More affected Age
SKOLIOSIS	**11.03%**	**9.3%**	**12.7 %**	**13** ***(19.5%)***
LORDOSIS	**6.49%**	**7.3%**	**5.7%**	**11** ***(11.6%)***
KYPHOSIS	**3.57%**	**1.3%**	**5.7%**	**10** ***(5.2%)***

Graph.7. A Summary of incorrect posture prevalence among children.

According to their prevalence level the incorrect posture among children aged 10-13 years can be sorted as below:

- ❑ **Skoliosis** (11.03%)
- ❑ **Lordosis** (6.49%)
- ❑ **Kyphosis** (3.57%

✓ Girls are more affected by Lordosis *(Lumbar region)* while boys by skoliosis and kyphosis *(thoracic region)*.

Conclusion and discussion

From the results of our study was also observed that the most common postural deviation in children is **scoliosis** which was detected in 11.03%, while **lordosis** and **kyphosis** in 6.49% and 3.57% of subjects.
These results run alongside mos of the contemporary studies which emphasized that **scoliosis** is the most common postural deviation. (Bueno & Rech, 2013; Kratenova et al., 2007) For our study, it is important to emphasize that the diversity of our results compare with the reference authors, is logical as long as various diagnostic methods are performed. (Bueno & Rech 2013, Purenovic, 2007) Our results showed

that **boys** (12.7%) are more affected by scoliosis than girls (9.3%) but this evidence is different from the results of the international studies. Kane & Moe and Willner & Eden declare that **girls** are more affected by scoliosis while Karachalios had detected that **girls and boys** are equally affected by scoliosis. (Kane & Moe, 1970; Willner-Uden, 1982; Karachalios *et al.,* 1999)
Furthermore, our results show that **kyphosis (3.57%)** has also affected children aged 10-13 years and to be more precise from 308 subjects only 11 of them were detected with kyphosis. Our results regarding the prevalence of kyphosis among children are considerably lower compare to the foreign studies'results but this doesn't mean that the probabilities of incorrect posture to occur don't exist at all. Our results show also that **boys** are more affected by this deviation than girls the same evidences are provided even by another foreign study. (Bueno & Rech, 2013)
Lordosis is another postural deviation that affected children aged 10-13 years which is detected in 6.49 % of subjects. If we refer to international studies lordosis were detected in **27.9%** by Bueno & Rech, in **32.2%** by Sedrez, in **58.2%** from Protic-Gava, in **32%** from Kratenova and in **70%** by Stroebel. (Bueno & Rech, 2013; Sedrez et al., 2015; Protic-Gava et al., 2011; Kratenova et al., 2007; Stroebel, 2002) Regarding the prevalence of **lordosis** according to gender, the results of our study indicate that **girls** (7.3%) are more affected by lordosis than boys (5.7%).
Based on these results we highlight that incorrect posture occurs even in Albanian school age children. So we recommend that parents, teachers, and children should be more informed about good posture and the problems that might arise from an incorrect posture.
Further studies are important to be conducted in this field, in order to prevent the occurrence these deviations and their aggravation in our young generation.

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Anti-Doping Education Programmes in Albania

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Abstract

This paper provides a commentary on the European Council's recommendations about educational and information anti-doping strategies in Albania, along with world – wide academics views on strategies in the fight against doping. The need to design and co-ordinate the implementation of such programmes is imminent, because it is now acknowledged that investment in long-term, values-based education programmes may be more appropriate than detection-based deterrence activities, especially for a developing country as Albania that struggles to fund sport in general. At the most explicit level, that of discussing on where anti-doping education in Albania stands at present, it is argued about attempts in this area by several stakeholders like the National Anti-Doping Commission, the Ministry of Education and Sport, the Sport Service Agency, The National Olympic Committee and Sports University of Tirana. An important question arises: who should be addressed and who should be included in anti-doping education? At a deeper analytical level, it is argued on recommendations and clues to effective anti-doping education programmes. It is recommended to refer to evidence-base anti-doping research that allows the application and evaluation of key elements of effective anti-doping education and to examples like the WADA Alpha program or equivalent. At the end, it is suggested that we should seek strategies for communication on anti-doping education that can bridge differences in knowledge and interests of multiple actors.

Keywords: *Albania, Anti-Doping Education Programmes*

Introduction

Since November 2011, Albania enjoys the status of a country whose rules are completely compliant with the WADA Code, by being among the first signatories of the Copenhagen Declaration for recognition of WADA Anti-Doping Code and by the ratification of the UNESCO International Convention against.

Doping in Sport by Law no. 9623, dated 16.10.2006 (Monitoring Group, 2015). Nevertheless, according to the report, adopted at the 42nd meeting of the Monitoring Group of the Anti-doping Convention, on May 2015 in
Strasbourg,
Albania has not yet satisfactory fulfilled the obligations under the Anti-Doping Convention, even though the political commitment has been met (Monitoring Group, 2015).
Among the many recommendations, presented in the report, a primary focus is given to anti-doping education programmes. The obligation of the Albanian NADC (National Anti-Doping Committee) to design

and co-ordinate the implementation of such programmes is imminent, because it is now acknowledged that investment in long-term, values-based education programmes may be more appropriate than detection-based deterrence activities (Backhouse et al., 2012). According to the report (Monitoring Group, 2015), all other stakeholders (like, for example, the national sport federations, the National Olympic Committee, Sports University of Tirana and possibly other institutions) should cooperate closely with the Albanian NADC towards the implementation of anti-doping educational and information programmes among their athletes. Especially, Sports University of Tirana, a well established academic institution that conducts research in many areas of sports sciences, should play an important consultative role. As a matter of fact, during their visit in Tirana, the Evaluation Team gave special attention to the hearing from the academics of their views on how the University should support the fight against doping in the country, especially in the field of education.

This paper provides a commentary on the report's recommendations about educational and information anti-doping strategies, along with world-wide academics views on strategies in the fight against doping.

A view of Albanian Legislation regarding Anti-Doping Education

The World Anti-Doping Code was initially drafted in 2003 and then revised first in 2007 and then again in 2013, but the latest version has come into force, only on January 2015. The effectiveness of the WADA Code is ensured by the UNESCO Convention against Doping in Sport that defines the competences of the governmental and sport organisations in the fight against doping.

Albania has unanimously accepted the Code and committed to achieve full implementation of the Convention. It is worth pointing out, that for the purpose of this paper, only article 6 of the UNESCO Convention against Doping in Sport will be discussed. This article, which concerns Anti-Doping Education, follows as below:

- *The Parties undertake to devise and implement, where appropriate in co-operation with the sports organisations concerned and the mass media, educational programmes and information campaigns emphasising the dangers to health inherent in doping and its harm to the ethical values of sport. Such programmes and campaigns shall be directed at both young people in schools and sports clubs and their parents and at adult sportsmen and sportswomen, sports officials, coaches and trainers. For those involved in medicine, such educational programmes will emphasise respect for medical ethics.*
- *The Parties undertake to encourage and promote research, in co-operation with the regional, national and international sports organisations concerned, into ways and means of devising scientifically-based physiological and psychological training programmes that respect the integrity of the human person.*

In terms of legislation regarding anti-doping education, the Evaluation Team from the European Commission (Monitoring Group, 2015) concluded that:

- *Regarding article 6.1 of the Convention, there is no reference to anti-doping education in the Law on Sport (Law No. No.9376, dated 21.4.2005) or its amendments. The obligation of Parties to the Convention to "(…) to device and implement (…) educational programmes and information campaigns emphasising the dangers to health inherent in doping and its harm to the ethical values of sport" is missing from the Albanian Law.*

The only reference is found in the NADC Anti-Doping Rules (Organisation of the National Anti-Doping Commission). Article 8 of the said Rules indicates that "The Responsible

Doping Control Unit is responsible for developing educational programs and carrying out informational campaigns against the use of doping agents and methods in sport in cooperation with the competent public authorities, sport federations, unions and mass media."

- *Regarding article 6.2 of the Convention, Albania fulfils the requirements under the Article 45 of the Law on Sport (No. 9376 of 2005) which was originally adopted in 2005, "the state supports and finances the scientific research and training in sport. Training and research in sport shall be done by the specialised scientific institutions and by every sports organisation."*

Taking into account the circumstances in Albania, as further demonstrated in the report, it was made clear that, in practice, the evaluation visit was of consultative nature.

A view of where Anti-Doping Education in Albania stands at present

Does the continuing increment of doping cases in Albania indicate a shift in moral attitudes? According to WADA General Director (Howan, 2015), values across our societies have changed and there are studies to prove that "cheating" in its many forms is not only common place but also considered acceptable in many countries, just as long as you do not get caught. Therefore, spread of information about doping issues, in both components, physical health and moral wellbeing, becomes mandatory.

Referring to the legislation in Albania, the Doping Control Unit of the National Anti-Doping Commission (NADC) is responsible for developing educational programs and carrying out informational campaigns. According to the report (Monitoring Group, 2015), the material that has been used for education purposes consists of the WADA Prohibited List from 2010 translated in Albanian language and four (4) different brochures dealing with drugs and their side effects, the Therapeutic Use Exemption (TUE) and the doping control procedures which are originally produced by WADA and translated in Albanian. However, no educational activities are performed by the NADC since 2014, because the committee remains inactive. Under these circumstances, individual efforts for anti-doping education have been undertaken by several actors, but cooperation among them has been lacking.

The Ministry of Education and Sport has developed a new curriculum for primary schools to inform about doping health consequences, while teaching fair play and ethics.

The Doping Control Unit of the Sport Service Agency has been conducting national conferences about Doping in Sport, annually, and has been responsible for the dissemination of WADA Prohibited List to all National Sport Federations.

The National Olympic Committee has continuously played an educational role on anti-doping issues for athletes participating in the Olympic Games and the Mediterranean Games. The material used consists of an anti-doping handbook and a Fair Play folder.

Sports University of Tirana has included in its curriculum a course about doping issues and has started to conduct research activities about anti-doping in Albania.

Regarding efforts in the development of educational programmes and informational campaigns, the Evaluation Team from the European Commission (Monitoring Group, 2015) concluded that:

Albania information and education programmes are not well coordinated, not all of the target groups as indicated in the Convention are reached and not all of the topics of the educational programmes are covered. Moreover, the education and information programmes are not systematic and are lacking of the appropriate and/or updated educational material.

Recommendations and Clues to effective Anti-Doping Education Programmes

Based on the abovementioned, an important question arises: who should be addressed and who should be included in anti-doping education? According to Backhouse et al. (2009), anti-doping is a global issue and as such, requires 'connected' approaches, across countries and, most likely across related organisations.

The recommendations presented in the report (Monitoring Group, 2015) are directed to all stakeholders (like, for example, the national sport federations, the National Olympic Committee, Sports University of Tirana and possibly other institutions) that should cooperate closely with the Albanian NADC towards the implementation of anti-doping educational and information programmes among their athletes. These recommendations along with the continuing and increasing engagement of academics, in providing clues to better anti-doping education programmes are valuable, especially for a developing country as Albania that struggles to fund sport in general.

The Anti-Doping Education Recommendations, in order of appearance as presented in the report, along with a comment, for each recommendation, regarding clues provided by academics follow as below:

Recommendation 1:

The Albanian NADC should have the primary responsibility for preparing long-, and short-term anti-doping educational and information strategies. The Albanian NADC should develop their own education and information programmes.

Comment:

According to Blackhouse et al. (2012), common 'recipes for success', include (i) targeting young participants when attitudes and values are forming; (ii) providing interactive material that develops social skills; (iii) monitoring and delivering programmes with high degrees of fidelity; (iv) basing delivery on well-trained staff; (v) incorporating long-term 'booster sessions' delivered over a number of years. This reinforces and builds on intervention key messages.

In order to ensure effectiveness of its own education and information programmes, the NADC has to provide evidence of their application in Albania. Furthermore, research to evaluate key elements, such as those presented above, has to be conducted.

Recommendation 2:

The anti-doping education programmes should be valued-based and focus on prevention. Doping prevention programmes could be based on, for example, the Information Communication and Education (ICE) principle. More information can be found in the "Model Guidelines for Core Information/Education Programs to Prevent Doping in Sport" developed by the Monitoring Group of the Council of Europe.

Comment:

In recognition of the limitations of detection-based deterrence, WADA has placed more emphasis on prevention-based deterrence (Fahey, 2009). As a matter of fact, detection based policy does not serve health protection because it only catches those who are already using performance enhancing substances, rather than those who are contemplating on using them.

According to Woolf (2009) and Backhouse (2009), preventing the initiation of an unhealthy/undesirable behaviour is more effective than stopping one that is already established. In this context, approaches should be more social influenced and focused on developing core life skills, such as communication, decision-making and refusal skills (Backhouse, 2012). Alone, knowledge dissemination is ineffective in changing behaviour (Backhouse, 2012), as the findings

of Whitaker et al. (2012) suggest that performance enhancement substance users are seen as motivated, confident, unreliable and rule breakers, whereas non-users are perceived to be role models, reliable, risk averse and unwilling to try anything new.

Recommendation 3:

New information and education initiatives should focus on:

- using one or more platforms from which to deliver updated and available material – eg. building a website or/and apps for smartphones.
- educating NADC's stakeholders such as employees from customs, police, etc. to recognize and seize illegal doping substances.
- educating physicians in anti-doping including recognizing doping abusers to be able to advise and possibly treat them.
- training its own Doping Control Officers.
- educating primary school teachers in how to teach fair play and ethics and developing anti-doping material that teachers could use in the classroom.

Comment:

These steps offer the most systematic way of reaching a satisfactory result in the fight against doping. Such an approach is suited not only to efforts aimed at preventing doping, but also to efforts aimed at control of existing doping cases.

Recommendation 4:

The Albanian NADC should establish educational and information programmes for all level of athletes, especially for young athletes, athletes' parents, coaches, sports managers and officials, sports doctors, journalist etc. To succeed with this, it is recommended to start out by using already developed resources, such as the WADA Alpha program or equivalent and translate it into Albanian.

The anti-doping educational and information programmes should cover:

- Substances and methods on the Prohibited List
- Anti-doping rule violations
- Consequences of doping including sanctions, health and social consequences
- Doping control procedures
- Athletes' and athlete support personnel's rights and responsibilities
- Therapeutic Use Exemptions
- Managing the risks of nutritional supplements
- Harm of doping to the spirit of sport
- Applicable whereabouts requirements.

Comment:

In Albania, research into prevention and education about doping issues is at the beginning, with very little indication of best practice. Therefore, it is in our best interest, to draw from a developed resource such as WADA Alpha program, which offers all templates from which to borrow education material to reach all of the target groups as indicated in the Convention and to cover all of the topics of the educational programmes, especially substances and methods on the prohibited list, health consequences of doping, doping control procedures, athlete's rights and responsibilities.

Recommendation 5:

The Albanian NADC and the sports institutions involved in anti-doping educational and information programmes should use several ways to disseminate anti-doping information. Possible communication channels are building a website, the social networks (Facebook/Twitter), the outreach program, annual conferences on antidoping etc.

Comment:

Although knowledge dissemination through a website and social networks is non-traditional as compared to annual conferences, exchanging data via online communities, forums and message boards on Facebook or

Twitter offers several benefits. Smith A.C.T & Stewart B. (2012) have identified four unique benefits through a study that undertook a qualitative analysis of an online discussion forum dedicated to muscular development. First, online forums allow individuals to communicate with each other without the need for real time participation or geographic proximity, unlike face to face contact. Second, online forums reveal sensitive, personal and specific content without compromising confidentiality, while offering easy and safe access for observers (Hsiung, 2000). Third, online forums not only encourage the expression of opinions, but they also provide an insight into the mechanisms of group opinion transformation, having consequential effects on participants' behaviours (Kozinets, 1998). Fourth, online forums allow participants to imagine and sustain new identities (Turkle, 1995).

Recommendation 6:

Albanian famous athletes could be used as "doping-free sport ambassadors" to promote clean sport.

Comment:

Prototypes form part of the social reaction pathway of the prototype/willingness model and refer to the images an individual has of the type of person they think engages in a particular behaviour (Whitaker et al., 2012). The more an individual perceives the prototype to be favourable and similar to themselves, the more willing they are to engage in the behaviour (Zimmermann & Sieverding, 2010). For example the prototype of the famous 'clean' athlete and the images of the positive attributes, that accompany him.

Concluding Remarks

We should seek strategies for communication on anti-doping education that can bridge differences in knowledge and interests of multiple actors such as the National Anti-Doping Commission, the National Sport Federations, the National Olympic Committee, Sports University of Tirana and possibly other institutions. The Albanian authorities should encourage and fund research studies related to anti-doping by Sports University of Tirana and other interested institutions (Monitoring Group, 2015). The Albanian National Anti-Doping Commission should play a role on the coordination of the research activities on anti-doping in the country and sponsor such research programmes (Monitoring Group, 2015).

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The maximum strength parameters influencing the improvement of speed running phases

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Abstract
The use of various training methods to improve the result in speed races is a major research by coaches. Each of the strength training methods has its importance and its role in improving running speed according to the running technical phases.
The aim of this study is to identify the impact of two different training methods at the improvement of maximum strength has the main factor in improving the running speed according to its technical phases.
In our study were involved two experimental groups *(Gr-1 N=19; Gr-2 N=19)* and one control group *N=20*, trained with different strength methods. The tests that were utilized consisted in: *60 m* dash divided in two distance *0-30m* and *30-60m*; and isotonic (*Peak torque)* muscular strength and isometric *(Maximum torque)* muscular strength. The data were elaborated with SPSS analytic system, using paired simple t-test and Pearson correlation test.
The results obtained for ***Gr-1*** shows: *Maximum torque(R-L) 0-30m: r=0.89 r=0.62; 30-60m: r=0.83 r=0.61; 60m: r=0.86 r=0.62* **(p<0.05).** *Peak torque(R-L) 0-30m: r=0.82 r=0.80; 30-60m r=0.76 r=0.74; 60m r=0.79 r=0.77***(p<0.05).** Speed running improvement 0-30m=0.31sec; 30-60m=0.15sec; 60m=0.45sec. ***Gr-2*** shows: *Peak torque(R-L) 0-30m: r=0.84 r=0.8; 30-60m:r=0.90 r=0.89; 60m:r=0.87 r=0.88* **(p<0.05)**. *Maximum torque(R-L) 0-30m: r=0.91 r=0.79; 30-60m: r=0.92 r=0.78; 60m: r=0.91 r=0.80* **(p<0.05)**.Speed running improvement 0-30m=0.19sec; 30-60m=0.15sec; 60m=0.31sec.
Conclusions Based on obtained results, they show that the improvement of the maximum strength in athletic speed races remains the main factor in improving the running speed in these races. Different techniques of strength provide different correlations according to the technical phases of running speed. The improvement of the maximum strength through exercises that are standardized at the maximum of one repetition show higher correlation in the improvement of the first distance, so in the accelerating phase, while the plyometric exercises show dominant correlation at 30-60m and 60m distances. Despite the fact that both methods used in the study show significant data in the improvement of strength indicators, their interchange in the process of improving the speed of running would be more effective.

Key words: *strength, training, methods, speed, running phases, improvement.*

Introduction

Continuous improvement of athletic sports results, achieving record levels of results, indicating at the same time that the estimation of the maximum limits of human performance is always relative and subject to unstoppable improvements.

Athletics determines the fastest, the stronger and the most enduring of the human being. So when looking at the rate which these results are improved and the level where these currently are, we understand that still exist an unused potential of elite athletes, who is expected to be evidenced in the concrete sports performance.*(Boreham et al, 2006)*.

Introducing with competence and seriousness of accurate scientific concepts in the training process has constituted an increasingly important direction of the professionals and coaches works. We should be realistic in that aspect there is still much to do because in our training process are observed various deficiencies, the elimination of which constitutes a significant reserve for increasing the results in another level of quality results. *(Sale & MacDougall .,1981)*. The athlete must confront the external reactions which impose him to improve muscle strength magnitude. The maximum muscle performances are dependent on strength parameters which are manipulated from training, so from the rates of maximal strength and maximum speed. *(Zatsiorsky &. Kraemer, 2006)*.

The elite sport requires more improvements of a high level of performance wherein the center of it remains the production of manpower that derives from force component, usable for muscle movement and speed of movement. *(Komi, 2003)*. The movement speed, especially in athletics runs, have shown a correlation between absolute and relative strength, by being more tied to distance running speed or to the achievement of maximal speed than by starting ability phase. The conclusions showing that strength abilities are related to sprint performance and these relations changes according to the running speed phases. *(Young et al., 1995)*.

Many coaches in developing strategies to speed running training processes, keep a primary focus that the strength, power, and speed are essentially dependent on each other because they are all the product of the same functional systems. Consequently, coaches should take into consideration the specific strength training according to individual characteristics, based on performance capacity and technical running phases. *(Delecluse, 1997)*.

Strength is an indicator directly responsible for accelerating the ability of an athlete, which can be justified by the fact that, as fast is produced or achieved high muscular strength levels in relation to time as faster a response acceleration happens.*(Schimidtbleicher, 1992)*.

Izquierdo et al 2002 has studied Strength-Speed relationship, recommended that the production of optimal muscle strength is about 40-60% of voluntary muscle contraction. Therefore power production dominates by increasing force and time in order to achieve this values in unit time. *(Izquierdo et al., 2002; Cronin et al ., 2007)*.

To enhance performance by 2.2% on speed running required to improve performance by 21% on squat strength. This relationship verifies correlations between two skills. *(Wilson et al., 1996)*.

Sale suggested that training should be specified according to movement scheme, the speed of contraction, types of contracting and muscle forces contracting.*(Sale & MacDougall, 1981)*. Multidimensional nature of running speed requires specific exercises which can lead to improved performance speed of its technical phases.(Yetter & Moir,2008).

Training of athletes in speed should be kept in focus the importance of each technical phase of running which is interdependent. An athlete can dominate the first starting phase and achieving maximum speed, but can the athlete keeps this speed as long as possible.

Numerous studies have already conclusively shown that physical element determined in speed running are the power and maximum strength, supported by regular technical

sprint. So, it will be seen in our study the role of strength skills in acceleration phase and achieving the maximum speed is crucial in the result of this discipline. (Young et al.,1995) ;(Delecluse et al., 1995).

To achieve maximum speed, must distinguish between the speed of moving as an indicator of the quality and speed running as physical skills. Achieving maximum speed is possible through optimal coordination of the stride length and frequency. (Cronin & Hansen., 2005).

The methodology of the training process aimed to improve sport results in speed competition continuously. The most recommended methods include low loads but with a large number of repetitions, where the load stimulus enhance the development of speed and coordination but also running kinematics movement. The implementation of these methods, researchers recommend the use of training equipment such as parachutes, running with weights and weight vests which help in the development of acceleration and explosive movements. Using methods with low loads have an impact not only on improving the speed of running but also improve muscle strength development. *(Delecluse et al 1995); (Cronin et al., 2008).*

The development of running speed performance requires specific training of strength and power knowing that these components have a correlation between them. *(Wilson et al ., 1993)*. Improvement of power and strength promote the recruitment and synchronization of fast motor units affecting neuromuscular stimulation thus will improve the interaction between synergist muscles, by inducing the improvement of speed running performance. *(Carroll et al .,2001)*.

As it is stated above, is clearly and authenticated that there is a strong correlation between the strength indicators and speed of running. To prove that this study were obtained in experiment 2 (two) training methods to highlight which of these methods will affect more on the improvement of the running speed on all its technical stages.

The aim of this study is to identify the impact of two different training methods at the improvement of maximum strength has the main factor in improving the running speed according to its technical phases.

Methodology:

Literature review: This literature was selected by different research sectors that are based on the internet like as "Jab Ref" "Pub Med" "Google scholar" "Medline" "Sport Discuss" taking into consideration stated data on foreign and Albanian books or scientific research articles published in different conferences and particularly on "Journal of Strength and Conditioning Research". This study is a qualitative indirect method.

The selections of literature focused more on training process, maintaining a right balance between all elements that affecting speed results.

Selection of the subjects: Our study is focused on 58 subjects, students of the "Sports University of Tirana" . All subjects agreed to participate by free will maintaining their name anonymous. Students were separated into 3 groups. Two of these were experimental groups (*strength group; plyometric group*) and one was the control group. The average age of participants were 19-20 years.

In our study participated only those who weren't involved in other physical activities or sports to exclude other training loads impact.

Measuring Instruments:

In order to collect data for strength parameters and speed running are used these measuring instruments:

- Brower Timing Systems 2010, which is built to be applied as a measuring system to assess the time and speed movement. Brower Timing Systems 2010, in our study it was used for testing the speed of running in 0-30m, 30-60 m and 60 m distance.

- Isotonic Force Dynamometer "Easytech" is an instrument that measures the muscle strength and the power in two ways in dynamic (isotonic) and static (isometric) movements

Methodology of tests performed: The study is conducted for a 6 month period (October 2015-March 2016) of academic year including the time of subject selection, testing time and the experiment.

The tests $\mathbf{t}_1$ (before) and $\mathbf{t}_2$ (after) are extended for 2 (two) weeks. Testing and retesting was performed in the same ways and conditions. In the statistical analysis are not included the data of injuries / left subjects from the experimental phase.

The three groups developed tests to measure the indicators:

1. ***60m running speed test which was used to measure the time of two distance, respectively as first distance 0-30m and second distance 30-60m, time measured in second.***
2. ***Isotonic and isometric Muscles strength Test, tested on Force Dynamometer.***

Variables which are taken in our study are units measurement of force muscle, obtained from lab tests. The importance of variables selection is to show how they affect on speed running of description distance time, where in our case are:

- Peak torque (P-torque-right) (highest muscular force output similar to a one repetition maximum effort in isotonic. (Nm).
- Peak torque (P-torque-left) (highest muscular force output similar to a one repetition maximum effort in isotonic. (Nm).
- Maximum torque(Max-torque-right) maximal muscular force output similar to a one repetition maximum effort in the isometric test. (Nm).
- Maximum torque (Max-torque-left) maximal muscular force output similar to a one repetition maximum effort in the isometric test. (Nm).

To analyze the impact of studied variables was used **SPSS** analytical system using different analytical techniques such as **Paired samples t-test** used for $\mathbf{t}_1$ (before) and $\mathbf{t}_2$ (after) tests results. Although we have used **Pearson correlation** to show the interactions between two variables strength and speed running.

- ☞ The collected data from ***running speed test*** were analyzed on the *mean value* of group in **second**, for three distances measured **0-30m; 30-60m; 60m** according to the respective groups. These test results were compared for phases $\mathbf{t}_1$ and $\mathbf{t}_2$ tests.

The experiment:

The experiment was focused on 2 (two) different strength training methods and their impact on the improvement of speed running according to its technical phases. After the selections of subjects, they performed pre-tests, where subjects were randomly divided into 2 (two) experimental groups (N=19) and 1 (one) control group(N=.20). Two experimental groups performed 14 (fourteen) weeks of training, each group with corresponding methods, from November 2015- February 2016. While the control group was not part of any training session. The first two weeks of the training program were used for learning and adaptation to exercises techniques. The ratio of work, rest between series and exercises were implemented at 1:3. Variables loads do not change throughout all the experimental phase, to avoid changes in performance as a result of the effect of load increasing progressively/

- ☞ ***First experimental group (Strength group)was trained on Maximal strength exercises***

First experimental group "strength group" conducted 2 (two) training sessions a week. Exercises training loads are calculated from the maximum of 1 repetition, for each subject. For each subject, the load is calculated in percentage scaled by 50%, 70%, 85%, 90% by testing at maximum strength. The exercises that we used in this group were: ***squat; dead***

lifting; bench press; calf press.

☞ ***Second experimental group (Plyometric group) was trained on plyometric exercises.***

The second experimental group " Plyometric group " was trained twice a week, with two exercises per session. To implement this program were applied 40-60-80- cm platform. The intensity of performing this exercises was required in maximum value, which was measured by movement speed, where for the **1**- **st** exercise intensity was measured by contact time, while in the **2**-**nd** exercise, intensity was measured by distance. These exercises were:

1. Depth jumping with two legs. Training loads of exercise 3 x 10 x 60 / 80cm.

2. Repeated jumps on one leg starting over a 40cm platform. Training loads of exercise: 15 x 3 with the right and left leg each.

Results:

Results are elaborated in mean value in group. Their interpretation is made in the differences from t_1-t_2 according to the t-test

Statistical analyses t-test for Control gr.							
		mean value in second	Differences t_1-t_3	N	Std. Deviation.	Std. Error Mean	Sig. (2-tailed)
Pair 1	0-30m t_1	4.93	**0.03**	**20**	0,53	0,12	**0,73**
	0-30m t_2	4.9			0,57	0,13	
Pair 2	30m-60m t_1	4.33	**-0.02**		0,97	0,21	**0,52**
	30m-60m t_2	4.35			0,95	0,21	
Pair 3	60m t_1	9.24	**-0.04**		0,74	0,17	**0,37**
	60m t_2	9.28			0,73	0,16	

Table 1. *Statistical analysis (t-test) for control group to three distances*

☞ *According to table **1**, results have shown:*

Control group: the results for the first distances 0-30m, have changed in mean values with **0.03 seconds** and not significant for **sig <0.05**. For the second distance 30-60m have changed to negative mean values by **-0.02 seconds** and not significant for **sig <0.05**. For the third distance **30-60m** have changed to negative mean values by **-0.04 seconds** and not significant for **sig <0.05.**

Statistical analyses t-test for strength gr.							
		mean value in second	Differences t_1-t_3	N	Std. Deviation.	Std. Error Mean	Sig. (2-tailed)
Pair 1	0-30m t_1	4.75	**0.31**	19	0,58	0,13	**0,00**
	0-30m t_2	4.44			0,66	0,15	
Pair 2	30m-60m t_1	4.11	**0.15**		0,91	0,21	**0,00**
	30m-60m t_2	3.96			0,98	0,23	
Pair 3	60m t_1	8.86	**0.45**		0,72	0,16	**0,00**
	60m t_2	8.41			0,80	0,18	

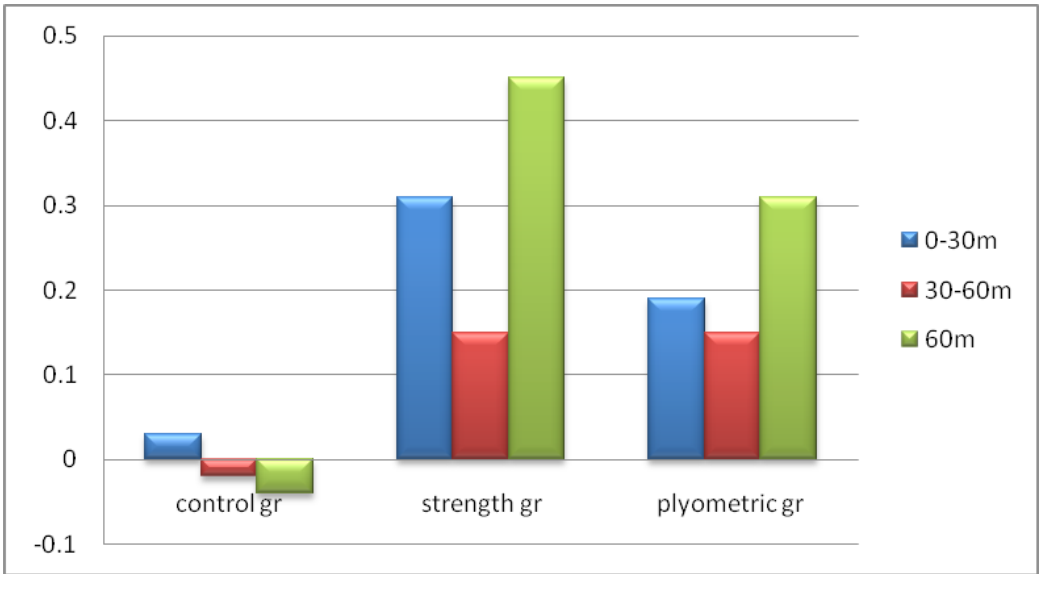
Table 2. *Statistical analysis (t-test) for strength group to three distances*

☞ *According to table **2**, results have shown:*
Strength group: the results for the first distances **0-30m**, have changed in mean values with **0.31 seconds** and significant for **sig <0.05**. For the second distance **30-60m** have changed in mean values with **0.15 seconds** and significant for **sig <0.05**. For the third distance **30-60m** have changed in mean values with **0.45 seconds** and significant for **sig <0.05.**

Statistical analyses t-test for plyometric gr.							
		mean value in second	Differences t_1 t_2	N	Std. Deviation.	Std. Error Mean	Sig. (2-tailed)
Pair 1	0-30m t_1	4.79	**0.19**	19	0,71	0,16	**0,00**
	0-30m t_2	4.60			0,76	0,17	
Pair 2	30m-60m t_1	4.21	**0.15**		1,23	0,28	**0,00**
	30m-60m t_2	4.06			1,33	0,30	
Pair 3	60m t_1	9.01	**0.31**		0,94	0,22	**0,00**
	60m t_2	8.70			0,97	0,22	

***Table 3**. Statistical analysis (t-test) for Plyometric group to three distances*

☞ *According to table 3, results have shown:*
Plyometric group: the results for the first distances 0-30m, have changed in mean values with **0.19 seconds** and significant for **sig <0.05**. For the second distance 30-60m have changed in mean values with **0.15 seconds** and significant for **sig <0.05**. For the third distance **30-60m** have changed in mean values with **0.31 seconds** and significant for **sig <0.05.**



***Graph 1.** Comparison of the time changes of running speed between the experimental groups for the three measured distances*

☞ *According to graph 1. results have shown:*
It is shown that the time of speed running is improved for the two experimental groups but more to the strength group, that has been trained with maximum strength exercises. Distances from 0-30m and 60m predominates by the strength group. For the second distance 30-60m, does not have a difference on improvement of speed running for both groups.

In table 4. Is presented a statistical analysis of strength parameters with their improvement from t_1-t_2 and significant value.

t-test statistic analyzes on strength parameters t_1-t_2 95% Confidence Interval of the Difference							
		Control gr.		**Strenth gr.**		**Plyometric gr.**	
		% of improvement	Sig. (2-tailed)	% of improvement	Sig. (2-tailed)	% of improvement	Sig. (2-tailed)
Pair 1	P-torque-right	**0,34**	**0,89**	**16,47**	**0,00**	**11,13**	**0,02**
Pair 2	P-torque-left	**2,69**	**0,13**	**10,71**	**0,00**	**8,91**	**0,00**
Pair 5	Max-torque-right	**2,90**	**0,43**	**16,07**	**0,00**	**-0,91**	**0,69**
Pair 6	Max-torque-left	**-0,32**	**0,86**	**20,32**	**0,01**	**2,37**	**0,47**

Table 4. T-test statistic analyzes on strength parameters between differences t_1-t_2 in percentages of improvement and their significances.

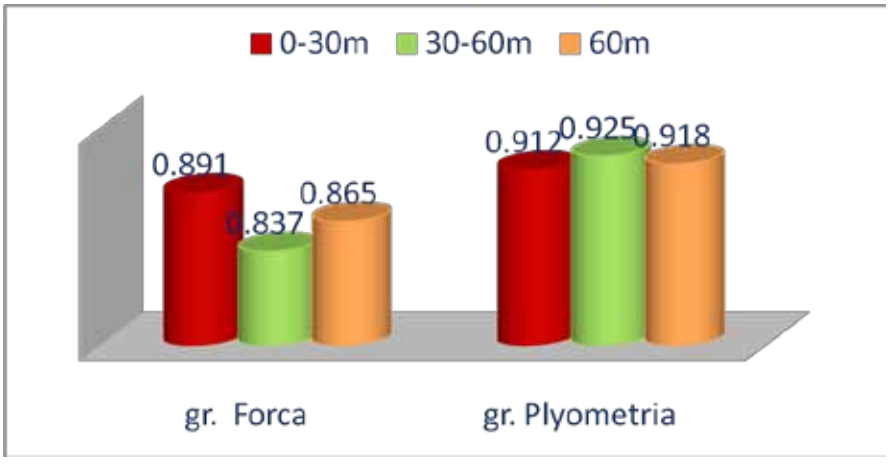
☞ *According to table4. results have shown:*

The strength group has predominated over the plyometric group in improving the maximum strength parameters. Also the results of the mean values differences for the strength group are more significant for p <0.05 than plyometric group.

In table 5. Is presented a statistical analysis of correlation between strength parameters (peak torque- highest muscular force output similar to a one repetition maximum effort in isotonic) and results of speed running according technical phases.

		Control Gr.		**Strength Gr.**		**Plyometric Gr.**	
Correlation between *peak torque& maximum torque* with speed running		P-torque-right	P-torque-left	P-torque-right	P-torque-left	P-torque-right	P-torque-left
0-30m	Pearson Correlation	,705**	,715**	,829**	,806**	,840**	,859**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	444,75	442,97	580,14	587,28	459,10	598,71
	Covariance	23,41	23,31	32,23	32,63	25,51	33,26
30-60m	Pearson Correlation	,875**	,867**	,764**	,749**	,901**	,894**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	919,73	895,19	798,43	814,79	850,42	1076,29
	Covariance	48,41	47,12	44,36	45,27	47,25	59,79
60m	Pearson Correlation	,810**	,809**	,796**	,778**	,878**	,889**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	651,39	639,41	676,02	687,05	604,29	780,86
	Covariance	34,28	33,65	37,56	38,17	33,57	43,38
	N	20	20	19	19	19	19

Table 5. Correlation between *peak torque* and speed running for various distances 0-*30m; 30-60m; 60m*



Graph 2. *Correlation between peak torque and speed running for various distances 0-30m; 30-60m; 60m*

☞ *According to* ***Graph 2****. results have shown:*

For the strength group: the maximum strength parameters have shown more correlation between speed running for the distance from 0-30m.

For the plyometric group: the maximum strength parameters have shown more correlation between speed running for the distance from 30-60m

In table 6. Is presented a statistical analysis of correlation between strength parameters (maximum torque-maximal muscular force output similar to a one repetition maximum effort in the isometric tes) and results of speed running according technical phases.

		Control Gr.		Strength Gr.		Plyometric Gr.	
Correlation between *maximum torque* and speed running		M-torque-right	M-torque-left	M-torque-right	M-torque-left	M-torque-right	M-torque-left
0-30m	Pearson Correlation	,744**	,634**	,891**	,621**	,912**	,796**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	327,08	263,60	569,78	393,42	563,64	459,10
	Covariance	17,21	13,87	31,65	21,86	31,31	25,51
30-60m	Pearson Correlation	,888**	,776**	,837**	,618**	,925**	,787**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	650,41	537,76	799,50	584,66	987,64	783,09
	Covariance	34,23	28,30	44,42	32,48	54,87	43,51
60m	Pearson Correlation	,835**	,721**	,865**	,622**	,918**	,804**
	Sig. (2-tailed)	0,00	0,00	0,00	0,00	0,00	0,00
	Sum of Squares and Cross-products	467,97	382,43	670,60	477,26	714,94	583,44
	Covariance	24,63	20,13	37,26	26,51	39,72	32,41
	N	20	20	19	19	19	19

Table 6. *Correlation between maximum torque and speed running for various distances 0-30m; 30-60m; 60m*

Graph 3. Correlation between maximum torque and speed running for various distances 0-30m; 30-60m; 60m

According to Graph 3. results have shown:

For the strength group: the maximum strength parameters have shown more correlation between speed running for the distance from 0-30m.

For the plyometric group: the maximum strength parameters have shown more correlation between speed running for the distance from 30-60m

Discussions and Conclusions

Requirements for continuous improvement of results in speed races are always in search of methods and studies that help in the development of the physical ability of speed.

The results obtained from the experiments conducted showed that strength is a direct ability to improve the result at the speed of running. The classification of different types of strength and different methods of training have shown that they have different impacts on the speed of running and its technical phases.

According to the experiment on the impact of the maximum isotonic and isometric strength parameters measured in laboratory tests, correlation has been shown to be moderate to strong with running speed.

The training method of the ***strength group***, which contained exercises that develop maximum strength such as squat; dead lifting; bench press; calf press, showed significant changes for values of **p <0.05**, resulting in changes in speed of running for the three measured distances.

For the first distance of **0-30m** the speed changed by **0.31seconds** to the mean values in the group and the correlation of the maximum strength parameters with the running speed was: Maximum torque (R-L) r = 0.89 r = 0.62; Peak torque (R-L) r = 0.82 r = 0.80 (p <0.05).

For the second distance, **30-60m** the speed changed by **0.15second** to the mean value in the group and the correlation of the maximum strength parameters with the running speed was: Maximum torque (R-L) r = 0.83 r = 0.61; Peak torque (R-L) r = 0.76 r = 0.74 (p <0.05).

For the hole distance tested, **60m**, the speed changed by **0.45 seconds** to the mean value in the group and the correlation of the maximum strength parameters with the running speed was: Maximum torque (R-L) r = 0.86 r = 0.62; Peak torque (R-L) r = 0.79 r = 0.77 (p <0.05).

The correlations obtained by the Pearson correlations test for the ***strength group*** showed more impact on the change of the running speed result for the first distance from **0-30m**. Therefore to results obtained, the maximum strength ability has a greater impact on the development of accelerating abilities, to firs technical phases of running in sprint races.

The exercise method used to ***plyometric group***, which consisted of exercises that develop explosive strength and jump height such as : Drop jump over the platform from 60 to 80 cm high and Repeated jumps on one leg starting over a 40cm high platform, showed significant changes to value **p<0.05**. The exercise method induces changes in the running speed time for the three measured distances.

For the first distance, **0-30m**, time of the speed changed by **0.19 seconds** to the mean value in the group and the correlation of the maximum strength parameters with the running speed was: Maximum torque (R-L) r = 0.91 r = 0.79; Peak torque (R-L) r = 0.84 r = 0.8 (p <0.05).

For the **30-60m** distance, time of the speed changed by **0.15second** to the mean value in the group and the correlation of the maximum strength parameters with the running speed was: Maximum torque (R -L) r = 0.92 r = 0.78; Peak torque (R-L) r = 0.90 r = 0.89 (p <0.05).

For the hole measured distance, **60m**, time of the speed changed by **0.31 seconds** to the mean value in the group and the correlation

of the maximum strength parameters with the running speed was: Maximum torque (R-L) r=0.91 r=0.80; Peak torque(R-L) r=0.87 r=0.88($p<0.05$).

The correlations obtained by the Pearson correlations test for the ***plyometric group*** showed more impact on the change of the running speed result for the second distance from **30-60m**. Therefore to results obtained, the maximum strength parameters improved by plyometric exercises has a greater impact on the development of achieving maximum speed, to second technical phases of running in sprint races.

Improvement of the maximum isotonic and isometric strength parameters for the ***strength group*** is higher than the plyometric group. Respectively, ***strength group*** shows for peak torque-right leg (16,47%), peak torque-left leg (10,71%) maximum torque-right leg (16,07%) maximum torque-left leg (20,32%). ***Plyometric group***: peak torque-right leg (11,13%), peak torque-left leg (8,91%) maximum torque-right leg (-0,91%) maximum torque-left leg (2,37%). All data were calculated in percentage mean value in group.

Improvement of strength parameters has been more evident in ***strength group***. According to this conclusion, we can say that the method of exercises used in strength group is closest to the model of the movement at the maximum isometric and isotonic strength test. Also, the exercises used are closer to this muscular regimen which has shown an evident improvement in the strength parameters by providing moderate correlation with the improvement of performance in the accelerating run phase.

Different from the ***strength group*** exercise method that is similar to muscular regimen during maximum strength test, the ***plyometry group's*** exercise method show different muscle regimen than the main movement of the test. Based on the above analysis of the similarity of muscle regimes during exercise, the ***plyometric group*** showed a smaller improvement in the maximum isometric and isotonic strength measured in the laboratory. Despite the no significant changes***(p>0.05)*** in the maximal muscular force, the correlation of these strength parameters has been moderate with the running speed at the achieving maximum speed phase. The impact of the plyometric exercise is to stimulate the explosive force and the height of jump. Starting from this conclusion, the improvement of the explosive force and the height of jump by plyometric exercises affect the obvious improvement of running speed to achieve maximum velocity.

The application of each of the training methods in the experiments showed that it improves running speed independent of different training models. Their interaction in the training sessions will be one of the future focus of ongoing studies.

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Contractual sporting rights under international legal acts

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Abstract

The right to sport can be said to be one of the most important rights of the individual, for the fact that sport is one of the most effective ways of free exercise of all affirmative activities for his individuality and personality. The importance of sport has increased dramatically in recent years, as many states, law enforcement agencies and large organizations, or legal entities have been engaged in order to protect and provide capacity for its development.
International law through the drafting and adoption of legal acts with international value has made it possible to sanction all legal grounds in the context of sport development and the resulting agreements. In order to avoid abuses, the protection of young talents, the protection of the parties involved in the sports work contracts, the right and practice refer to a full legal framework that takes value in the design of models and type contracts for employment and development professional athletes around the world.
Among the best models for sports development, we can say that Europe and the US have played an important role in promoting its values and for the effective protection of athletes from any misuse and abuse of their figure. Contractual freedom in the sports field as much as it serves to promote human and sporting rights and creates enormous consequences for the parties involved when one of them violates its core criteria because of the great importance of sport in the days of today, brings colossal gains in certain cases to different humanities or societies. For this reason, this paper will briefly discuss some of the common elements that have sports work contracts in these countries, with a view to evolving the way of protecting and treating athletes from these two different legal systems.
Key words: Sport; contract; sponsorship; international acts; legal framework; abuse; rights of the parties; border barriers; court.

Introduction

Referring to the evolution of sport development, one can distinguish the fact that one of the factors that has directly influenced its formation and growth at the international level is the marketing[1] that has been made to him through giant billions of dollars worth of

1 Marketing in professional sports has increased dramatically since the 1980s, and now it is more than one industry

investment. Different corporations around the world pay large sums of money to sponsor tennis or golf tournaments, football matches at the national and interstate level, boxing matches, weightlifting etc, competing with each other to conclude contracts with the big leagues of professional sports. This is because of the tremendous impact that sports has around the world through the fans and the advertising of international sponsors. In this context, the contracts receive extraordinary value by representing the rights of the participating parties and the applicable legal framework in each case. Marketing, support, and sponsorship contracts are similar to other service contracts as they identify the parties, determine the duration, list the obligations of the parties, and establish projections in cases of violations of contractual rights. Companies that sponsor a player, league, or event want to make sure that their investment will provide a healthy return in the form of increased exposure and sales for their products or services. In contracts signed between sponsors and athletes or the League, there are several provisions that promotion specialists should include to ensure their financial well-being[2] in the event of unexpected situations with a view to the mutual protection of the parties. Such provisions relating to compensation of damage, force majeure and insurance responsibility to assist in the protection of sponsors when events occurring are beyond their control[3] are indispensable for these types of contracts and assist in the elimination of all cases abusive to the rights of the parties.

A sponsorship contract, whether between a company and a player, or between a company and a sports event, is a legally binding agreement that ensures that each party will fulfill the respective obligations under the agreement. The totality of the contract must clarify in detail the obligations of each party in the event of unforeseen circumstances, such as a labor dispute, a natural disaster, a player's injury, or bankruptcy of the company, etc., in order to then avoid all the judicial conflicts that might arise from them. The following is an example of a typical section in an athlete's promotion contract that describes the player's obligations, where:

"The Athlete agrees during the term of this Agreement, or any extension thereof, with the following criteria:

(α) Allow the Company to use its photograph in connection with the promotion and promotion of football goods, with or without its name, signature, or nickname;

(β) Demonstrates, discusses, and highlights the newest features of the company's soccer products in each case;

(χ) Presented himself for press interviews, radio, and / or television presentations assigned to him by the Company, insofar as it is consistent with the practice and requirements of his game;

(δ) Cooperates to the maximum possible extent, in accordance with the practice and requirements of its game, in effectively promoting the company and in public relations activities, trying to get acquainted with the company's merchants and their sales personnel in every area of the market;

(ε) Cooperates with the company in providing advice, suggestions, and recommendations regarding the eligibility and playability of the company's current football lines, the development of new football lines from the society, and information about significant products of the company football and market trends for the latter;

(ϕ) Cooperates to the maximum extent possible in making personal public appearances, in important promotion events for invitations to the public;

2 Harrison David. *Competition law and financial services*. Abingdon: Routledge, 2014.

3 Andrew Zimbalist, TheBottom Line: Observations and Arguments on the Sports Business (Philadelphia, PA: Temple University Press, 2006), fq.113.

(γ) Regarding to this promotion, it is agreed that the company must pay the athlete any basic travel expenses such as transport, hotel, food, and those required by the athlete concerned with the promotion in question if specifically requested by the Company[4]."

In the case of a legal dispute, the contract clearly indicates the conditions athlete is obliged to respect. For example, if the promoted athlete refuses to make public appearances on behalf of the sponsor, this will be a violation of the athlete's obligations as described above and the latter has the right to address the court for the selection of consequences.

 Sporting work contract.

The sporting contract can be said to be one of the most commonly used contracts in the field of sports law, as at any time the various clubs or clubs and sporting organizations employ athletes for different time periods and wages. For the importance a sportsman exerts and the influence he exerts in the public at large today, it is necessary to address the entire legal protection framework and all the necessary facilities to favor him through the conclusion of a contract of employment sustainable and legal.

In the American system regarding sports contracts, apart from the standard contract of employment in sport, there is also a number of other contracts that regulate certain relationships in such a developed industry as the sport in this country. Judicial practice in this area is extremely rich, dated in time since the 19th century[5]. We also note that the impact of international sports organizations on the American system seems small compared to Europe[6]. The US system does not operate with courts or tribunals specializing in sport, but ordinary courts resolve disputes that may arise on a case-by-case basis, in contrast to the European sports system, whereby all sports disputes are resolved by the Court of Sports[7], created for this purpose. By means of an agreement between the European States, a Geneva-based Arbitration Court has been established, which examines all issues or disputes arising from the violation of the criteria of sports contracts or rules of developed sports games whose decisions are returned to binding effect on the parties.

Regarding the standard sports contract, in this contract, among other things, the minimum requirements set out in the UEFA[8] and other European football organizations are also expressed, reinforcing once again the importance it derives from sporting rights. It is evident the fact that the purpose of these international organizations (FIFA, UEFA) is to extend as far as possible their areas of influence to legal power, apart from the economic and political power they have in the world of sport, and the intervention in this legal framework also expresses the best manifestation in practice of this goal. Despite the particularities that sport has as industry, its special nature, the work relationships created between the athlete and the club he chose to belong to are not issues related to sport, but are more closely related to social issues rule of law, the need for society to regulate certain socio-economic relations, the protection of fundamental human rights[9] (prohibition of forced labor, prohibition of discrimination, the right to earn a living legally, freedom of movement, etc.) affirmed these by the most

4 Herbert F. Lewis, Thomas R. Sexton, and Kathleen A. Lock, "Player Salaries, Organizational Efficiency, and Competitiveness in Major League Baseball," 8 Journal of Sports Economics 266 (2007), fq.137.

5 Judicial practice in this area is extremely rich, dated in time since the 19th century '

6 Casale Giuseppe, PerulliAdalberto. *Towards the single employment contract: comparative reflections*. Oxford: Hart; Geneva: ILO, 2014

7 The Geneva Arbitration Tribunal elects all sports controversies in Europe

8 *Union of European Football Associations*

9 Sanctioned in the ECHR

important international acts for this purpose. Regarding the reflection in practice of the Sports Work Contract models, we notice that both in Europe and in the United States results in moving toward a global standardization, given that the legal arrangements of the sports work relationship are to a large extent similar from state to state. They include similar provisions relating to the general and specific conditions of sporting activity, preventing any type of abusive behavior and leaving room for mutual interpreting in different cases. Also, the global dimension of sport every day creates the need for worldwide unification in order to avoid discrimination or the consequences for the players of the public. For this reason, the aim of the International Sports Organizations[10], among other things, is to set standards globally.

As we move to the analysis of contractual sports law in our country, we say that neither the Labor Code nor the Law on Sports[11] does not expressly state that the contract of work between the player and the club will be governed by regulations issued by the respective Federation of Sport. The practice and the parties involved in this case recognize this as a contract foreseen by the law and hence its application as a form for entering into a contract is seen as a legal obligation[12]. However, the Labor Code of the Republic of Albania, which is the relevant law for regulating the employment contract, does not prohibit such practice, either expressly or by any extended interpretation of its provisions. However, the interest and arrangement of the type contract between players and clubs from the Albanian Football Federation is to a certain extent justified given the special nature of the sport and its peculiarities that distinguish it from other industries. Thus, as long as this type of contract is in line with the provisions of the Labor Code, the Constitution of the Republic of Albania and the ratified International Agreements, then its widespread implementation in practice will not have problems.

Also, in case of disputes between the parties, when the case goes before the Albanian court, the latter will refer to the provisions of the Labor Code, the Constitution[13] of the country and international agreements ratified by the hierarchy of norms provided by the Constitution as well Labor Code. In this case any terms of the contract that are in contradiction with the provisions of the Law and the Constitution, or only with the spirit of the latter, these conditions will immediately be dismissed by the Court, regardless of the provisions of the regulations of sports organizations.

Conclusions

The contribution of freedom of movement to the preservation of peace, the removal of barriers[14], the unification of European citizens, who are increasingly communicating, are increasingly linked through digitalism in an environment without obstacles, without discrimination and distinction due to nationality , race, religion, political, ideological beliefs, etc., is one of the most invaluable values in the historical process towards the realization of the European Union about a progressive, pro-peace philosophy and values that stand at the foundation of this union. In this respect, these general principles of consolidation of an interstate union have necessarily affected the sporting field as well. Due to the removal of barriers between states, many fans and the public are able to travel without any obstacles to the destinations where championships or even the old sports

10 For more see FIFA, UEFA

11 See: Law no. 79/2017 "On the sport"

12 Çela K., "The right to work ", Tirana, 2011

13 Constitution of the Republic of Albania, Article 122

14 All these are sanctioned in the Treaties on the Functioning of the European Union such as the Treaty of Rome 1958, the Treaty of Lisbon 2009, the Treaty of Maastricht 1993)

matches are played, being closer to the matches and following them in a way direct. This has led to a major development for the right to sports, as free movement in a single European space by fans means development, investment, peace, activity, solidarity and more revenue for both the different Leagues and the athletes themselves.

There is no dobut that the removal of both physical and bureaucratic border barriers, the behavior of the concept or status of a "European citizen" and all the privileges it carries, the right to move freely, to look for work, to be employed and to 'established in each member state, the mutual recognition of qualifications within the EU and the prohibition of any discrimination related to nationality have significantly improved the lives of EU citizens. People's free movement precedes the union, because when people move freely, get hired, freely educate, create contract labor relations and naturally serve to combat prejudice on a national basis[15].

In this regard, the current EU perspective on the Western Balkans and the Balkan countries' own approach is to create a Balkan "mini-shengeni", where, as mentioned above, the project for the creation of an Economic Union between the states of the Balkans would constitute the concrete materialization of this new perspective. The idea is that the economies of the countries in the region are exceptionally weak to be competitive at European level, so creating a common market of a common economic space would make it possible for this reality to change. Access to joint projects in sports, infrastructure and tourism is certainly positive in principle, as these are the steps to be taken towards the creation of a common economic space.

Thus, the approach and strategy on the future of the Western Balkans seem to follow the same steps that once followed the end of World War II followed the main countries of Western Europe[16] and where customs union and free movement were the premise of the economic union of the Community and the realization of the common or internal market of the EU. Although formal multilateral agreements on the region in the past have not been missing and we should mention here: South East European Cooperation Process[17], South East Europe Cooperation Initiative, Central European Free Trade Agreement[18], etc.), but in practice a little is done for their implementation.

Also, the problems that Balkan societies have with organized crime, policy consolidation, state-level corruption, and the independence of the judiciary, make it extremely difficult for the undertaken sporting enterprises at regional level to have the right seriousness and the high level of development or encouragement of athletes, making the majority of them move away from the representatives of developed sports venues. Thus, the first fundamental step would be to improve the socio-economic internal situation, consolidate democracy and rule of law in these countries, and then could freely think seriously about such major projects at regional level.

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15 Galantino Luisa " Diritto comunitario del lavoro" Torino, 2009

16 See at: http://rspcsee.org/en/pages/read/

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Difference between finalists in antropometric parameters and 100 meters running of top athletes

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Abstract

Athletics, runnings concretly, are the backbone of the Olympic Games originated from the VIIIth century B.C. in Antic Greece. As such, she continous to be popular in modern world as activity of physical development of people.
Eventhough in the essence is remained as unchanged activity, nowadays runnings are subject of scientific studies in order to find factors or determiners which influence on runners performance. Based on secondary datas of eight World Championships which were held every two years, for 2011, 2013,2015,2017, and five Olympic Games held on 2004,2008, 2012 and 2016, the goal of this study is to evaluate the difference between running parameters in 100 meters or short distance for superior athlets or sprinters.Between many indicators, were chosen those which most often standard measures were conducted and results were drawn that which indicator has more influence or more weight in frequent success in short runnings.From the received results we were able to do a kind of generalization, which means that with same approach and same methodology can we achieve similar results even in other cases, but not always since it is possible the influence of some variable in hidden or invisible form which our analysis did not take them for review.The study is focused on male category only or superior athletes, gained values at Pearson coeficient is noticed that limitted value of 30 degrees of freedom (df(N-2))isr=0,325with light critereum (p=0,05) ,respectively r=0,250with hard critereum of statistical conclusion (p=0,01).Since important statistical distinctions were gained in these two motoric differences, it should be verified between which finalists groups this distinction exists.Anova analysis should be applied for this intention.

Key words: 100 meter runners, anthropometric characteristics, movement skills and T-test

Introduction

Running in short distances are the oldest form of races. The 1986 Olympic Games and the 1983 World Cup, included running races from one end of the stadium to the other. Later, they began to be standardized at certain distances, and at the modern athletics world championships they were divided into three running groups: 100 meters, 200 meters and 400 meters. Even running in 100 meters, with scientific knowledge advances, numerous researches and their applications in the training process of athletes, convincingly showed that well-prepared athletes easily

withstand functional and motor requirements, which were practiced by runners during the race.1 The muscular force plays main role in running course, in the right direction and intensity, in terms of the activity of energy mechanisms (aerobic, anaerobic and mixed). In this context, according to the law of reaction, the runner pushes one foot from the ground, which exceeds body weight. The ground counteracts in the same size, but in the opposite direction, enabling forward displacement..2 The result at 100 meters running is influenced by a number of factors. At the beginning of the race or at the start, though very short, reaction time or starting time can influence the result because there are about hundreds of seconds to be considered. Reaction at the start cannot be guarantee for the fastest result. Runners increase the running speed especially during the second half of the distance, in the last 50 meters to the finish. Arrival to finish is considered when the athlete crosses the line with his/her body,which means that the extremities (hands, feet and the head) although it may be found beyond the line of finish, cannot be considered as an arrival to the finish. Although there are short distances and running speed is high, even measurements especially in the finish should be precise because there is very little deviation between athletes that can arrive at once to the finish. For this reason, sensors, pictures and video captures are used to better analyze who from the athletes reached first, second, and so on. Climatic conditions play a very important role in the result of running..3 Wind, depending on blowing direction may have affect in the growth or slowing of the athlete's speed. Even though it is worth for every competitor in a particular place and time, the problem is that the results of a place where the wind blows can be different from results of another competition in the same discipline, in 100 meters running. Atmospheric and air pressure can be considered, but there is no impact because running is very short and the amount of oxygen for this distance is mostly concentrated in the muscles of the runners.4 And when it comes to the muscles and physical characteristics of runners, these are among the most important elements influencing (in maximum) results..5 The big muscles and physical forms of an athlete as in bodybuilding means even greater weight, and this can also affect even in slower footsteps. An athlete may not have swollen and developed muscles, but is taller and has bigger footsteps. When it comes to the length of the athlete we should make the difference between the length of the body in general and the length of the feet and the throwing step. In this context, statistical tests and interpretations of the results have also been made in particular subheadings. After the interpretation of the results, an explanation has been given on the importance of the study from theoretical and practical point of view, and also in a particular subheading.6

The purpose of the project

The purpose of this study is to research some anthropometric parameters (longitudinal dimensions and body mass) running speed of 100 meters and speed of reaction (from the moment of the signal to the moment of reaction or start) as well as to analyze the differences between World Championships 20011 2013 2015 2017 and Olympic Games 2004 2008 2012 2016 in some anthropometric parameters (longitudinal dimensions and body mass) running speed of 100 meters and speed of reaction (from the moment of the signal to the moment of reaction

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or start).

Measurement and analysis of basic morphological characteristics of athletes is the foundation on which a training process can be built. Specific anthropometric features are needed to be successful in some sports disciplines, although the expert's opinions often change when it comes to this issue. Analysis of body composition is also a standard procedure which helps to improve and make the athlete's training process more optimal.

Sample of athletes

As a sample for this work I have included finalists in the World Championships 20011 2013 2015 2017 and Olympic Games 2004 2008 2012 2016 in some anthropometric parameters (longitudinal dimensions and body mass) running speed of 100 meters and speed of reaction (from the moment of the signal to the moment of reaction or start). In total, in this research I have included 31 top runners (finalists) of the eight World Championships and 30 top runners (finalists) in total of 61 finalist athletes of the Olympic Games and World Championships.

Methods of processing results

The data collected and grouped have been sorted into the SPSS program for analysis. First, we have made a basic elaboration of them, where we have found the average of the averages or the general which we have presented in the tables, then we went through the regression analysis in SPSS. After calculations, we started with the analysis of the results by interpreting them or showing what they are going to say.

Based on the purpose submitted, methods of processing results are applied which enable the provision of information sufficient to accomplish the purpose.

For the accomplishment of such work the basic statistical parameters will be calculated and distribution for each variable, as well as asymmetric measures and normal distribution:

- Minimum and maximum values (R.min-R. max)
- Arithmetic average (Ma)
- Standard Deviation (Ds)
- Asymmetry Parameters (Skewness and Kurtosis)
- T-test

The interconnection relationships between variables in manifest spaceas well as correlations between variables.To determine the difference between anthropometric and specific variables (running) of two groups, discriminative analysis of T-testwill be applied.The minimum and maximum values are also known as extreme values. A value of x in which the function has the maximum or minimum is called a critical value. The maximum positive value at point A and the minimum in point B represents the turning points,where in the first form the curve is concave while in the second convex.

Interpretation of athletes results in olympic games and world championship

In the table below I have shown the basic statistical parameters of the variables applied in thispaper, where the arithmetic average values are presented, minimum result, maximal result, standard deviation, distribution parameters or asymmetric (Skewness – tilt, asymmetry) and the degree of alignment of the roof curve of distribution results (Kurtosis - convexity).

The basic statistical parameters of finalist athletes in the 2004-2015 Olympic Games

Tabela 1.	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
MOSHA	8	19.00	31.00	25.2759	2.75028	.111	-.192
PESHA	8	66.00	91.00	77.8276	6.57956	-.004	-.592
LARTËS	8	170.00	195.00	180.4828	5.52023	.236	.752
VR100M	8	9.82	10.29	10.0717	.11923	-.337	-.300
SHPREA	7	.11	.18	.1463	.01570	.168	-.181

The basic statistical parameters of finalist athletes in the 2011-2017 World Championship

Tabela 2.	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
MOSHA	8	19.00	35.00	26.2813	4.30479	.304	-.821
PESHA	8	68.00	94.00	80.2188	7.39108	.298	-.564
LARTËS	8	170.00	195.00	182.3125	7.66827	-.008	-.891
VR100M	8	9.58	10.33	9.9161	.22531	.555	1.348
SHPREA	8	.12	.19	.1547	.01866	-.107	-.806
Valid N (listwise)							

Runners based on the results appear as an average homogeneous group with a higher number of values to the lower ones. Although there is a significant difference between the minimum and the maximum result, it is seen that the flexibility and convexity acquired (Skewness and Kurtosis) do not show a significant asymmetry.

Coefficients of interconections between morphological and motoric variables to finalists of the world championships and olympic games

By inspection of table 3 of limited values to Pearson coefficientsit is noted that the limited value for 30 degrees of freedom (looseness) df (N-2)) is r = 0.325 with an easier criterion (p = 0.05) respectively r = 0.250 with severe criterion of statistical conclusion (p = 0.01).So the statistically significant coefficients of the variableswith the highest degree of statistical conclusion (p <0.01) are marked with two star signs.

With easiest criterion of statistical conclusion (p <0.05) the correlation coefficients are marked with a ...by inspection of this table we notice that age is not in correlation with any applied variables.Body weight stands on a statistically significant correlation with body height p <0.01. The height of the body except that stands in correlation with the body weight it stands in the negative correlation with the running 100 meters p <0.05

Correlation coefficients of morphological and motor variables in the finalists of the World Championships and Olympic Games

Correlations

Tabela 3		MOSHA	PESHA	LARTES	V100M	SHEPRE
MOSHA	Pearson Correlation	1	.101	-.044	-.014	-.191
	Sig. (2-tailed)		.440	.734	.914	.139
	N	61	61	61	61	61
PESHA	Pearson Correlation	.101	1	.704**	-.224	.159
	Sig. (2-tailed)	.440		.000	.083	.222
	N	61	61	61	61	61

LARTES	Pearson Correlation	-.044	.704**	1	-.316*	.104
	Sig. (2-tailed)	.734	.000		.013	.427
	N	61	61	61	61	61
V100M	Pearson Correlation	-.014	-.224	-.316*	1	.108
	Sig. (2-tailed)	.914	.083	.013		.406
	N	61	61	61	61	61
SHPREA	Pearson Correlation	-.191	.159	.104	.108	1
	Sig. (2-tailed)	.139	.222	.427	.406	
	N	61	61	61	61	61

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Differences between four Olympic Games 2004-2016 and World Championships 2009-2015 on the morphological and motor variables of the top runners

In the table...are presented differences between four Olympic Games 2004-2016 and the four world championships 2009-2025 on the morphological and motor variables of the top runners.

By inspection of this table we notice that no significant statistical difference between the two groups on two anthropometric and motor variables were obtained, respectively running at 100 meters (VR100M) and reaction speed (SHPREA).Since no significant statistical differences were obtained in these five anthropometric and motor variables, should not be required between the groups of finalistseventually there is any significant difference. By the Post hoc analysis ... analysis that we did not presnted for space reasons ...

Independent Samples Test

Tabela 4		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
MOSHA	Equal variances assumed	6.003	.017	-1.074	59	.287	-1.00539	.93594	-2.87820	.86743
	Equal variances not assumed			-1.097	53.253	.278	-1.00539	.91648	-2.84340	.83263
MOSHA	Equal variances assumed	.438	.511	-1.329	59	.189	-2.39116	1.79922	-5.99139	1.20906
	Equal variances not assumed			-1.337	58.985	.186	-2.39116	1.78883	-5.97062	1.18829
PESHA	Equal variances assumed	4.924	.030	-1.060	59	.294	-1.82974	1.72670	-5.28486	1.62538
	Equal variances not assumed			-1.077	56.233	.286	-1.82974	1.69952	-5.23398	1.57449
V100M	Equal variances assumed	2.984	.089	1.239	59	.220	.06047	.04880	-.03718	.15812
	Equal variances not assumed			1.277	46.712	.208	.06047	.04737	-.03483	.15578
SHPREA	Equal variances assumed	.960	.331	-1.736	59	.088	-.00747	.00430	-.01608	.00114
	Equal variances not assumed			-1.746	58.976	.086	-.00747	.00428	-.01602	.00109

Conclusion

Within athletics, 100 meters running, is geting more and more popularized world-wide. Due to this, championships and Olympics are also organized, advances and results in many athletic disciplines. Advancement of scientific knowledge, numerous researches and their application in the athlete training process,suggest that the best prepared athletes endure the functional and motor competitive demands of the race. Knowing the importance and the worldwide popularity of running in 100 meters, the purpose of this study is to research some anthropometric parameters (longitudinal dimensions and body mass) 100 meters running speed and reaction speed (from signal moment to reaction time or start)as well as to analyze the differences between World Championships 2009 2011 2013 2015 and Olympic Games 2004 2008 2012 2016 on some anthropometric parameters (longitudinal dimensions and body mass) running speed of 100 meters and reaction speed (from signal moment to reaction time or start).

The participants in this study included the finalists of the four World Championships and the last Olympic Games. Based on the data from the authorized websites, data are collected for certain variables that are most important for the analysis, with these parameters of participants or contestants: age (years), weight (kg), length (cm), time (sec), and reaction time (sec / 100) at World Championships from 2009 to 2015, and Olympic Games from 2004 to 2016.The runners sample has included a total of 316 athletes of the four World Championships and four Olympic Games, of which 158 were from the first group or the Championships and 158 from the second group or the Olympiads.

The problem we have researched is of particular importance, because of the results obtained can be given a realistic picture of the differences in anthropometry of elite contestants in 100 meters, as well as the differences of time in running of this distance.

From researches done so far in our country, no research has been conducted of this nature, which could serve in our country for the selection of upcoming young sprinters based on the results obtained from this research project. Therefore, based on the findings of this research, without having to emphasize once again the worldwide popularity of running at 100 metersand physical development, we recommend in time identification of young runners who show greater chances of being longer, and prepare for the challenges of these runs. Of course, length itself, is no guarantee of success in running if not exercised in time, but it is a very important prerequisite, as this research identifies, in the orientation and materialization of result in time and proper manner.

We can conclude that anthropometric characteristics, running at 100 meters and the speed of reaction according to the years of holding these races, have been heterogeneous groups with different anthropometric and motoric characteristics with different speed.

Correlation coefficients show that running at 100meters and reaction speed depends on many other anthropological factors and not just from some morphological features applied in this paper. The results obtained show that running at 100 meters as well as the speed of reaction between the groups - World Championships, there were statistically significant differences.

The results obtained show that the speed of reaction between the groups in the Olympic Games had significant statistical differences. The results obtained show that the finalists of the World Cup and the Olympic Games in all the applied variables had no significant statistical differences...

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Comparison and running analysis of 1500m of olympic games 1960-2012 And world championship 1983-2013

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Abstract

The running of middle discipline every day is getting more and more popular in the people and it is a quite preferred challenge of athletes around the world. Recent years we see progression in results in many athletic disciplines. 1500 meters running with advancement of scientific knowledge and their application in runner`s training process, indicates convincingly that well prepared athletes with ease take on functional and motored demands which are trained in runners during the race.The evolution of middle results at male gender during the years is presented from 1960-2012.Olympic games-Results of middle runnings of world championship has varied a lot during these years.From 1983-2013 there was a significant increase in results.The succes of athletes in 1500 meter running must searched in other anthropological factors, firsly, in functinal skillls which are responsible for oxygen supply for muscles (O2). Runnings,in general at superior athletes are seen as motoric stereotypes of human movementswhich are made of repetetive steps and the frequence of steps at these runnigs depends from the function of central nevous system in cortical and subcortical level and very much determined from genetical factor.This is gained in all uptoday researches in this field.The values of middle runnings in 1500 meters are in high correlation with all long distance runnings of 1500m.
According to the many research of this nature, these values represent a clear indicator when we deal with homogenic groups and very high correlation in Olympic Games and in World Championship with elite athletes. 239 superior athletes were included in OlympicGames and World Championship.
Key words: *1500 meters, Olympic Games, World Champiionship, Motoric skills, T-testi.*

Introduction

Runnings fall into monostructural group of movements and they are of circle type(cyclic). Displacement of the body from one place to another is being done under the influence of inner forces(muscular) and outter ones (land withdrawal, earth traction and air endurance. Athletics functions on basis of a certain system of knowledge and practical applied habbits, which consists of basic theory and methodology in teaching and sportive training.Athletics is one of a kind of sports with complex and applicative character consisted by a large goups in which are included differentt athletic varieties, with similar characteriscs among them. The recognition of

structures in some dimensions of psychosomattic status of athletes(especially morphological ones), and its development, represents essential condition for right leadership in training process. Thanks to many researchs engaged in verification of the structure of some part of psychosomatic space, in a current phase of development of the science in physical culture, with convinced and full certainty we can speak on existence of various anthropometric characteriscs and skills of various features in 1500m runnings as well. According to the uptil now research are identified four factors, which determine morphological structure of human being and have certin coeficient in giving birth.These factors are-Factor of longitudional dimensions, factor of body volume,factor of tansfersal dimensions and factor of underskin fat tissue.

The goal of the research

Starting from the fact that teacher`s subjective evaluation cannot bring an exact conclusion on real engagement of the athletes in preparing for race is needfull that evaluation in this point to be conduccted on basis of gained results from the measurement of specific skills in 1500m runnings.

Main goal of the research is to verify factual state and distinction between Olympic Games and World Championship. In 1500 Olympic Games-(Roma,Tokyo, Mexico,Munich, Montreal, Amsterdam, Los Angeles, Seoul,Barcelona, Atlanta, Sydney, Athens, BeijingdheLondon).

World Championship,(Helsinki, Rome, Tokyo, Stuttgart, Gothenburg, Athens, Seville, Edmonton, Saint-Denis, Helsinki, Osaka, Berlin , Daegu dhe Moscow), and you will see the difference between OG and WC.

The methodology entities sample

The sample of this work includes 14 championships of Olympic Games(1983-2013) included 12 male finalist in total 166 elite athletes. Total 329 talented finalist of 14th.

Methodology of result processing

based on goals and hypothesis, result processsing methods will be applied which will enable to provide enough information in order to complete the goal.

In order to complete this work basic statistical parameters will be taken into account and asymetric measures and normal dissemination.-

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-Minimum and maximum values (R.min-R. maks)

-Mathematical average (Ma)

-Standard deviation(Ds)

-Asymetric parameters(SKEW and KURT)

Interconection reports between variable in manifestive space and correlation between system of variables.

T-test discriminative analysis will be applied to deterrmine between specific variables (middle runnings) of two Olympic and World championships

Results of basic statistical parameters

Results of basic statistical parameters of specific motoric variables in 1500m runnings of Olympic Games 1960-2012

In chart 1. are shown basic statistical parameters of motoric changebles of elite athletes. The sample has included 14 Olympic Games, including finalist athletes of Olympic Games (12 finalist athletes) in total 163 athletes where are shown mathematical average values, minimal result, maximal result, standard deviation, dissemination or asymetric parameters (Skewness-anim, asymetri) and the scale of extension of the height of the curve of the distribution of results(Kurtosis-Konveksitet)

Ch.1	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
OG2012	12	214.04	214.98	214.4783	.35652	.167	-1.793
OG2008	11	214.11	214.87	214.4545	.26273	.204	-1.402
OG2004	12	214.02	214.82	214.4217	.25750	.140	-1.358
OG2000	12	214.07	214.91	214.4350	.28618	.418	-.883
OG1996	11	214.03	214.78	214.3818	.24568	.431	-.966
OG1888	12	214.12	214.74	214.4992	.23689	-1.005	-.664
OG1984	12	214.07	214.99	214.5350	.37459	-.047	-2.051
OG1980	11	214.02	214.98	214.5000	.35457	.045	-1.451
OG1976	9	214.07	214.80	214.3000	.24531	1.101	.692
OG1972	12	214.17	214.27	214.2200	.05222	.000	-2.444
OG1968	10	214.02	214.80	214.3820	.28697	.348	-1.299
OG1964	12	214.08	214.91	214.5967	.27267	-.755	-.372
OG1960	9	218.10	225.40	220.7156	2.11782	1.450	2.629
OG1956	9	214.11	214.90	214.4211	.29906	.510	-1.269

Gained resultes show that there is noted distinction between themaximal result and minimal ones and it is obvious that the curveness and convexity of the gained distribbution (Skewness and Kurtosis) which shows that this variable has important evasion from normal distribution.

Results of basic statistical parameters

Results of basic statistical parameters of specific motoric variables in 1500m runnings of World Championship 1983-2013

In chart 2. are shown basic statistical parameters of motoric changebles of elite athletes. The sample has included 14 Olympic Games, including finalist athletes of World Champiionsship (12 finalist athletes) in total 166 athletes where are shown mathematical average values, minimal result, maximal result, standard deviation, diddemination or asymetric parameters (Skewness – tilt, asymmetry) and the scale of extension of the height of the curve of the distribution of results(Kurtosis– convexity)

Ch.2	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
WC2013	12	216.28	226.04	218.3342	2.69756	2.443	6.616
WC2011	12	215.69	218.69	216.9592	.92195	.432	-.645
WC2009	12	215.93	219.05	217.1150	1.00364	.602	-.698
WC2007	12	214.77	217.03	215.6525	.66248	.754	.022
WC2005	12	217.88	230.19	221.0625	3.82123	1.646	2.066
WC2003	11	211.77	218.49	214.0455	1.74338	1.635	4.322
WC2001	12	210.54	235.36	216.8575	7.73365	1.629	2.185
WC1999	11	207.65	227.05	213.4545	5.10974	1.999	5.490
WC1997	12	215.83	228.35	218.7042	3.32068	2.593	7.373
WC1995	12	213.73	223.01	218.1767	3.05734	.292	-1.384
WC1993	12	214.24	227.38	218.0642	3.27175	2.269	6.717
WC1991	12	212.84	220.54	216.5967	2.19754	.352	-.299
WC1987	12	226.80	235.92	230.8433	2.67056	.531	-.223
WC1983	12	221.59	226.46	223.4642	1.46240	.567	-.101

Mathematical average of vaiable in 1500m of World Championship(WC2012) is (218.3342 sec).Minimal result (216.28 sec) and maximal one(226.04 sec) of this variable shows noted distinction between the testers. This shows that difference in agedoes not represent major change in order to classify them in one unique group for experiment. Even though exists noted distinctin between the minimal and maximal results it is seen that the curveness and the convexity of the gained distribution (Skewness dhe Kurtosis) shows that there is important evasion from normal distribution.

Inteconnection results between specific – motoric vaiables of Olympic Game 1960-2012

In table 3 are shown corelation or interconnection coeficient between specific-motoric variables of Olympic Games.For a better chart reflection andfor clearer understanding interecorrelation coeficient, important coeficient of various levels of connections, are marked with asterics. Therefore, important statistical coeficient of variable with higher scale of conclusion (p-0.01) are marked with two asterics.With lighter criteria of statistical conclusion (p-0.05) of correlation coeficient are marked with one asterics. Interpretation of simple linear of correlation coeficient as it is known in most cases depends from the numbers of testers, that is accuratelety from the scale of freedom. For the sample of 163 testers at elite athlets, number of freedom scale is 38. With inspection of limited values of the chart, Pirson coeficient, it is noticed that value of the limit for freedom scale of 99 is r=0,217 with lighter criteria is (p=0,05), respectively r=0,283, with hard criteria of statistical conclusion (p=0,010) (Bala,1990).

Observing in general matrix of intercorrelation and especially internal correlation coeficint we notice that they are quite homogenic and grouped by the similarity of the measures ofsecific-motoric parameters in Olympic Games 1960-2012.

Ch.3	1	2	3	4	5	6	7	8	9	10	11	12	13	14
OG2012	1	.921**	.931**	.924**	.897**	.892**	.921**	.874**	.944**	.936**	.839**	.956**	.947**	.878**
OG2008	.921**	1	.979**	.977**	.876**	.881**	.897**	.849**	.888**	.984**	.946**	.959**	.986**	.966**
OG2004	.931**	.979**	1	.988**	.845**	.872**	.903**	.845**	.881**	.984**	.894**	.940**	.963**	.942**
OG2000	.924**	.977**	.988**	1	.868**	.886**	.914**	.859**	.890**	.981**	.914**	.954**	.968**	.940**
OG1996	.897**	.876**	.845**	.868**	1	.949**	.968**	.946**	.933**	.842**	.845**	.865**	.906**	.853**
OG1888	.892**	.881**	.872**	.886**	.949**	1	.959**	.994**	.982**	.859**	.893**	.888**	.930**	.864**
OG1984	.921**	.897**	.903**	.914**	.968**	.959**	1	.967**	.941**	.879**	.841**	.873**	.915**	.897**
OG1980	.874**	.849**	.845**	.859**	.946**	.994**	.967**	1	.969**	.822**	.860**	.850**	.899**	.854**
OG1976	.944**	.888**	.881**	.890**	.933**	.982**	.941**	.969**	1	.881**	.892**	.934**	.947**	.860**
OG1972	.936**	.984**	.984**	.981**	.842**	.859**	.879**	.822**	.881**	1	.903**	.964**	.973**	.924**
OG1968	.839**	.946**	.894**	.914**	.845**	.893**	.841**	.860**	.892**	.903**	1	.932**	.961**	.931**
OG1964	.956**	.959**	.940**	.954**	.865**	.888**	.873**	.850**	.934**	.964**	.932**	1	.984**	.911**
OG1960	.947**	.986**	.963**	.968**	.906**	.930**	.915**	.899**	.947**	.973**	.961**	.984**	1	.949**
OG1956	.878**	.966**	.942**	.940**	.853**	.864**	.897**	.854**	.860**	.924**	.931**	.911**	.949**	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed)

Results of interconnections between specific-motoric variables of World Championship 1983-2013

In chart 4 are shown correlation or interconnection coeficient between motoric vaiables of elite aathletes, finalists of World Champiionship. For a better chart reflection andfor clearer understanding interecorrelation coeficient, important coeficient of various levels of connections, are marked with asterics. Therefore, important statistical coeficient of variable with higher scale of conclusion (p-0.01) are marked with two asterics.With lighter criteria of statistical conclusion (p-0.05) of correlation coeficient are marked with one asterics. Interpretation of simple linear of correlation coeficient as it is known in most cases depends from the numbers of testers, that is accuratelety from the scale of freedom. For the sample of 163 testers at elite athlets, number of freedom scale is 38. With inspection of limited values of the chart, Pirson coeficient, it is noticed that value of the limit for freedom scale of 99 is r=0,217 with lighter criteria is (p=0,05), respectively r=0,283, with hard criteria of statistical conclusion (p=0,010) (Bala,1990).Observing in general matrix of intercorrelation and especially internal correlation coeficint we notice that they are quite homogenic and grouped by the similarity of the measures ofsecific-motoric parameters in World Champiionship 1983-2013

Ch.4	1	2	3	4	5	6	7	8	9	10	11	12	13	14
WC2013	1	.856**	.869**	.894**	.935**	.892**	.942**	.874**	.989**	.802**	.969**	.853**	.870**	.873**
WC2011	.856**	1	.987**	.983**	.910**	.881**	.921**	.849**	.830**	.983**	.868**	.972**	.991**	.977**
WC2009	.869**	.987**	1	.991**	.899**	.872**	.929**	.845**	.838**	.980**	.859**	.959**	.977**	.963**
WC2007	.894**	.983**	.991**	1	.925**	.886**	.947**	.859**	.871**	.969**	.893**	.965**	.978**	.965**
WC2005	.935**	.910**	.899**	.925**	1	.949**	.986**	.946**	.937**	.855**	.921**	.895**	.928**	.915**
WC2003	.892**	.881**	.872**	.886**	.949**	1	.959**	.994**	.982**	.859**	.893**	.888**	.930**	.864**
WC2001	.942**	.921**	.929**	.947**	.986**	.959**	1	.967**	.939**	.876**	.920**	.899**	.933**	.937**
WC1999	.874**	.849**	.845**	.859**	.946**	.994**	.967**	1	.969**	.822**	.860**	.850**	.899**	.854**
WC1997	.989**	.830**	.838**	.871**	.937**	.982**	.939**	.969**	1	.764**	.980**	.828**	.854**	.856**
WC1995	.802**	.983**	.980**	.969**	.855**	.859**	.876**	.822**	.764**	1	.793**	.971**	.974**	.934**
WC1993	.969**	.868**	.859**	.893**	.921**	.893**	.920**	.860**	.980**	.793**	1	.847**	.877**	.894**
WC1991	.853**	.972**	.959**	.965**	.895**	.888**	.899**	.850**	.828**	.971**	.847**	1	.989**	.939**
WC1987	.870**	.991**	.977**	.978**	.928**	.930**	.933**	.899**	.854**	.974**	.877**	.989**	1	.967**
WC1983	.873**	.977**	.963**	.965**	.915**	.864**	.937**	.854**	.856**	.934**	.894**	.939**	.967**	1

.** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

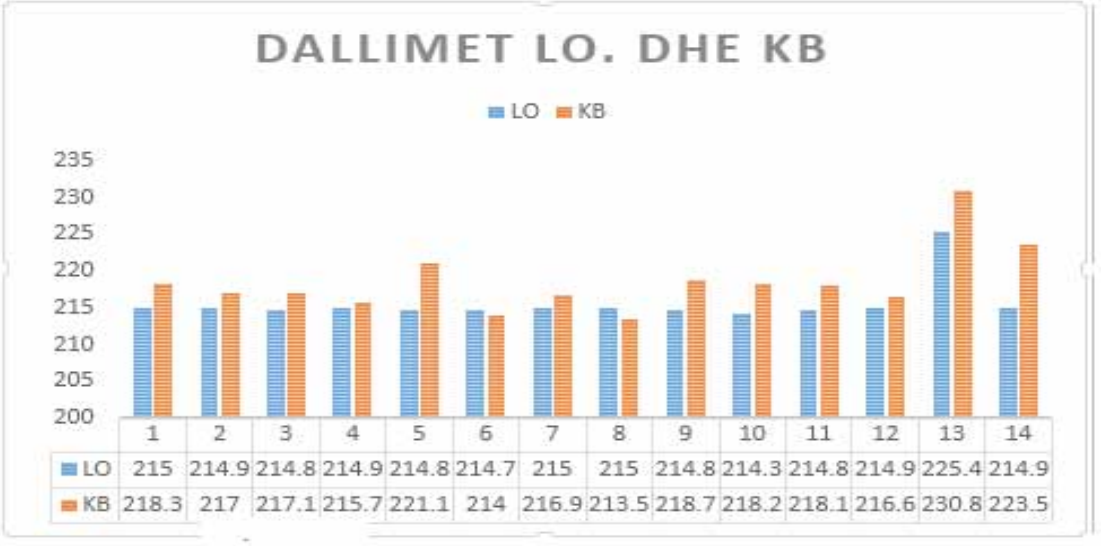
Valuesof Middle Running are in very high correlation with all runnings 1500m. According to many research of this nature, these values represents a clear indicator when we deal with homogenic groups and elite athletes. This shows that runniings in general at elite athletes are seen as stereotypes of motoric human movements wwhich are consisted of repetetive steps, and the frequency of steps at these runnings depends on function of central nervous system in cortical level and subcortical level.and determined by a high genetic factor. Specific variables at athletes have high correlations among them.This is gained from all researches so far as well in this field. Is worth mentioning that from specific variables of 1500m stands invery high correlation with all applied runnings in this work.

Differences in results of specific-motoric varibles in 1500m runnings at elite athletes in olympic games and world championship

Ch.5	Paired Differences					t	df	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
OG2012 - KB2013	-3.87833	2.56312	.73991	-5.50686	-2.24981	-5.242	11	.000
OG2008 - KB2011	-2.34727	.61304	.18484	-2.75912	-1.93542	-12.699	10	.000
OG2004 - KB2009	-2.69333	1.06940	.30871	-3.37279	-2.01387	-8.725	11	.000
OG2000 - KB2007	-1.21750	.69392	.20032	-1.65840	-.77660	-6.078	11	.000
OG1996 - KB2005	-5.85091	2.72984	.82308	-7.68484	-4.01697	-7.109	10	.000
OG1992 - KB2003	-7.73000	27.14332	8.18402	-25.96513	10.50513	-.945	10	.367
OG1988 - KB2001	-.21167	3.51428	1.01448	-2.44453	2.02120	-.209	11	.839
OG1984 - KB1999	1.04545	5.01484	1.51203	-2.32356	4.41447	.691	10	.505
OG1980 - KB1997	-3.03444	.92583	.30861	-3.74610	-2.32279	-9.833	8	.000
OG1976 - KB1995	-3.95667	3.04784	.87983	-5.89317	-2.02016	-4.497	11	.001
OG1972 - KB1993	-2.58900	1.40953	.44573	-3.59732	-1.58068	-5.808	9	.000
OG1968 - KB1991	-2.00000	2.30783	.66621	-3.46633	-.53367	-3.002	11	.012
OG1964 - KB1985	-8.91000	.94884	.31628	-9.63934	-8.18066	-28.171	8	.000
OG1960 - KB1983	-8.43667	1.06152	.35384	-9.25262	-7.62071	-23.843	8	.000

The difference between average mathematical values of specific variables (running in 1500m) and secific motoric parameters at finalists of Olympic Games and World Championship ae presented in chart 5. The values of difference between OG and WC in 1500m have better resultsthan the finalist of WC. The difference between these finalists in the running at this distance is important statistically, which is expressed with level of probability (p-0.000). In specific motoric values exists important distinction in World Championship (OG2012-WC201,OG-2008-WC2011, OG2004-WC2009,OG2000-WC2007,OG1996-WC2005, OG1980 - WC1997, OG1976 - WC1995, OG1972 - WC1993, OG1964 - WC1985, OG1960 - WC1983)exist an important statistical distinction between finalists of Olympic Games and World Championships. In all specific motoric values does not exist any important distinction between finalists of Olympic Games and World Championship(OG1992 -WC2003,OG1988 - WC2001, OG1984 - WC1999, OG1968 - WC1991).

The distinction of olympic games and world championship



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
LO	215	214.9	214.8	214.9	214.8	214.7	215	215	214.8	214.3	214.8	214.9	225.4	214.9
KB	218.3	217	217.1	215.7	221.1	214	216.9	213.5	218.7	218.2	218.1	216.6	230.8	223.5

Conclusion

Gained values from the basic statistical processing at Olympic Games 1896-2012 finalists, shows that these are more gatherred towaards the good results and their asymetry i positive (epicurtic) while the top of curb is mezzocurtic or suppresed with tendencies of harminisation of all conditional, technical, tactical elements and psychological preparness presents most important part of sportiv adaptation for participation in successfull competitions.

Gained values from the basic statistical processing at World Championship 1983-2012 finalists, shows that these are more gatherred towaards the good results and their asymetry i positive (epicurtic) while the top of curb is mezzocurtic or suppresed with tendencies of harminisation of all conditional, technical, tactical elements and psychological preparness presents most important part of sportiv adaptation for participation in successfull competitions.

Runnings in general at elite athletes are seen as motoric stereotypes of human movements which are consisted from repetetive steps and frequences of steps at these rnnings depends on functioning of central nervous system on cortical and subcorrtical level and determined by a vey high genetic factor. T his is gained from all researches so far as well in this field.The values of middle runnings 1500m are in very high correlation in all runnings of 1500m. In long distance. Accordingto many research of this nature, these values presents a clear indicator when we have to deal with homogenic groups and very high correlation as in Olympic Games and World Champiionship with elite athletes.

The values of differences between OG finalists shows that finalists of OG in 1500m running have better results than OG finalists. The difference between these finalists in running at this distance is important statistically., hich is expressed with high level of probability (p-0.000)

The difference in World Championship between these finalist in running at this distance is important statistically., which is expressed with high level of probability (p-0.000) and important differences are expressed from championship to championship.

The difference between Olympic Games and World Championship between these finalist in running at this distance is important statistically., which is expressed with high level of probability (p-0.000) and important differences are expressed.

The change between mathematical averages of the results of the researched groups is determined through T-test discriminative analysis.

All used motoric-specific variables, are undergone by basic processing statistics, on which is cerrtified that all tests have satisfactory metric chaacteristics

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