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STUDIA UBB EDUCATIO ARTIS GYMN., LX, 3, 2015, pp. 5 - 10
(RECOMMENDED CITATION)

STUDY OF THE YOUTH AND JUNIOR WORLD CHAMPIONSHIPS FINALIST ADULT PERFORMANCE DEPENDING ON THE PLACES

KOVÁCS BÁLINT, GYIMES ZSOLT, BENCZENLEITNER OTTÓ*[1]

ABSTRACT. The aim of the study analyses the subsequent-adulthood performance of world champion finalist male middle-distance runners from 1998 to 2012 with regards to respective competitor's ages. The study focuses on: the finalists of the IAAF World Youth and Junior Championships (N=240), the racer's time results at the age group world championship, and their personal bests (pb) in contrast to the location of their finals. Basic statistical analysis (mean, standard deviation - SD) and T-tests for independent samples were used to compare the average values of the group-age time results with their personal best time results. Significant progressions ($p \leq 0,05$) were found in the time results for all finishing-places in the cases of the youth and junior males, save for one exception. From the Youth World Championship finalist male middle-distance runners: only 25.9% were qualified to race at the Olympics or the World Championships. On the other hand, the junior age shows better performance in this case (50%). Investigation of the time results revealed significant progression for almost all of the prior-mentioned cases. For all examined placed runners of the Great Championships, remarkable differences were found between the youth and junior age group.

Keywords: *middle-distance runners, junior championship, youth championship*

Introductions

The training of the grouped aged athletes is always an important topic in sports. The motor skills are the most determining aspects of the success in athletics. Experts always pay emphasized attention to preparations and racings of the young athletes. International studies have been published with different

[1] *Hungarian University of Physical Education, Budapest, Hungary*
* *Corresponding Author: botto66@freemail.hu*

conclusions. According to Hollings, attendance of the IAAF World Junior Championships is a prerequisite for success as a senior athlete at the global level. In contrast, studies by ZELICHENOK (2005) analyzed the results of the World Junior Championships to show that 60-70% of the junior medalists and finalists did not go on to achieve any serious success at the senior level. Grund and Ritzdorf (2006), who studied the performance development of the finalists at the 1999 World Youth Championships, found that 90% of finalists (n=266) at these championships continued to improve in the subsequent years with 88% of the group composing the world top 100 ranked performances of the year in their respective events. Twenty-one percent of the group went on to qualify for the World Championships or the Olympic Games between 2000 and 2004. Holling and Hume investigated the developments of the junior age athletes of New-Zeland and Australia. They found a higher probability of medalists and finalists in the IAAF World Junior Championships to become elite seniors rather than junior non-finalist competitors coming into the sport or those who had not competed at the IAAF World Junior Championships. They diagnosed that the attrition rate is four times greater amongst junior non-finalist competitors and three times greater amongst junior finalist than junior medalists. This study focuses on the performance of middle distance runners who participated in the finals at the youth or junior world championships.

Subjects and methods

The study was focused on the male youth and junior world championship finalists between 1998 and 2012 (N=240). The runners competition and personal best time results were compared. The time results were converted into spiriev score points for easier calculation. The data was collected from the IAAF web-based database alongside other track and filed internet databases (e.g. www.all-athletic.com). Basic statistical analysis (mean, standard deviation-SD) and T-test were used for manifestation of the difference between the runner's competitive and personal-best time results. The achieved rank at the youth or junior championship level for the runner's personal-bests were compared with linear curve fitting.

Results

The observed "youth" aged male runners achieve their pb time result at age 18,86±2,97. In the case of the juniors: 21,02±3,39. From the youth world championship finalist male middle-distance runners, only 25,9% were qualified to race at the Olympics or the World Championships. On the other hand, the junior age shows better performance in this case (50%), figure 1.

Youth	Male
Olympic and WC	15,17%
only WC	2,67%
only Olympic	7,14%
not participate Olympics or WC	74,1%
Juniors	**Male**
Olympic and WC	35,16%
only WC	3,91%
only Olympic	10,94%
not participate Olympics or WC	50,00%

Figure 1. The Olympics or the World Championships performance

The time results were converted into spiriev score points for easier calculation. The personal best time result are significantly (P≤0,05) greater than the aged grouped competition time result almost in all cases. The results was calculated with T-test.

We found a strong correlation between the achieved rank at the youth or junior championship and the pb time results in either respective group. If a competitor has a better rank at the youth or junior championship then they will most likely hold a better pb in his adult carrier. We have denoted these coefficient's R^2 values as R=0,82, in the case of youth, and coincidentally the same for juniors R=0,82 (2. 3. figure)

The youth 800m runners mean improve were 11,36±8,07% and the juniors 8,63±7,45%. Slightly but non-significantly (P≤0,06) is greater with the youth's development than the juniors in this aspect. The 1500m youth runner's mean improvement was 7,61±7,31% and the junior's - 8,93±5,59%. This reveals no significant difference in this case between the age groups (P≤0,26).

6,25% (3 youth, 12 junior) of the studied runners claimed either an Olympics or a World Champion medal. 10,41% (6 youth 19 junior) of the examined runners participated in the Olympics or/and World Championships finals. 10,83% (10 youth 16 junior) of the observed racers participated in these championship's semi-finals and 11,66% (11 youth 17 junior) competed in the heats Almost two-thirds of the samples (60,83%; (82 youth 64 junior) failed to qualify for the Olympics or the World Championship. Between 1999 and 2012, 32 to 240 (10 youth 22 junior) would run times classified in worldwide Top Ten records for these years.

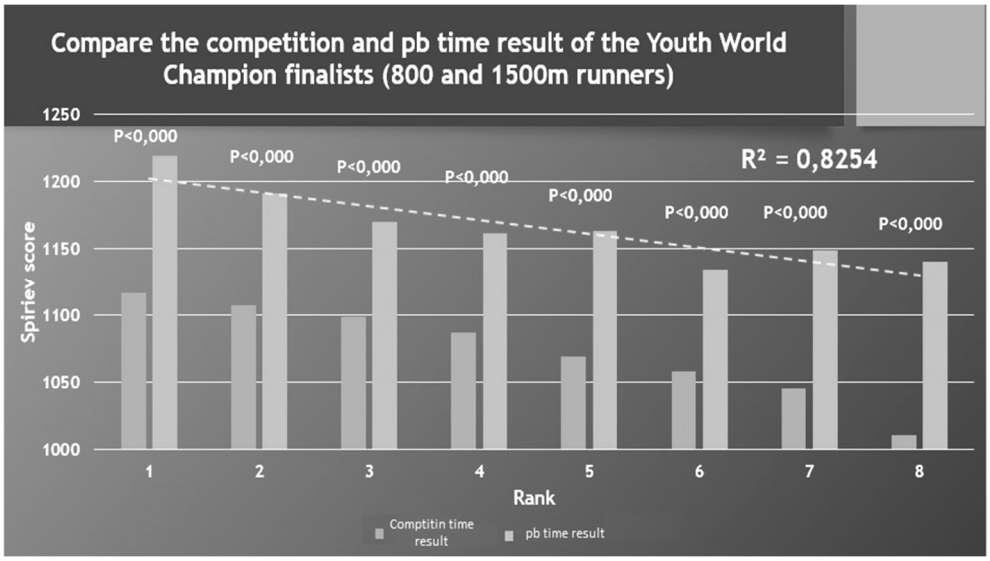

Figure 2. Compare the competition and personal best time result

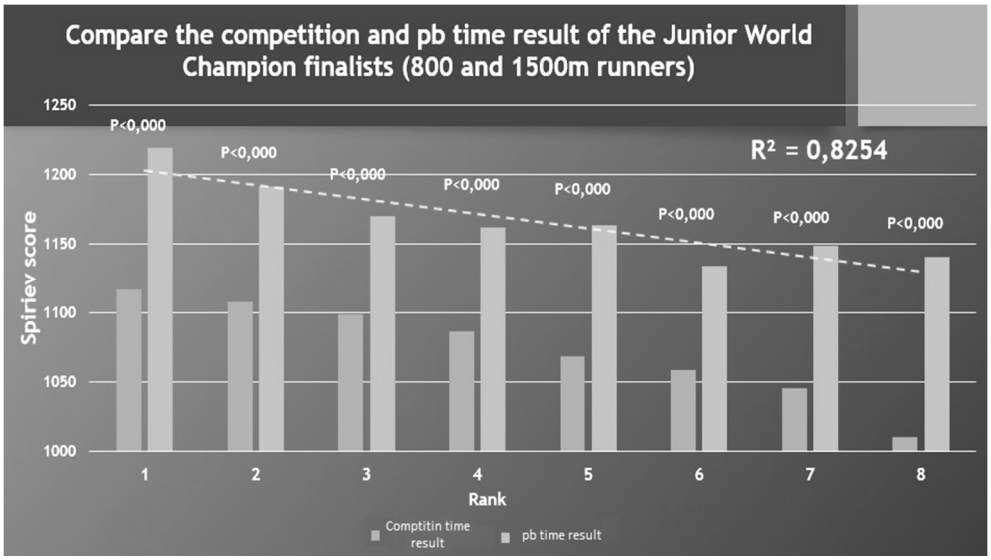

Figure 3. Compare the competition and personal best time result

Conclusion

The investigation of these two groups shows that the top junior athlete's adult performance in the great championships are more outstanding than the youth runners. The ratio of the junior athletes who participated in the great championships is two times greater than the youths. The youth athletes are projected to reach better personal best performances in their career - in contrast to those whom start as juniors. We diagnosed that the attrition rate is three times greater amongst youth competitors than amongst junior finalist. Those youth runners who carry on their running carrier consistently fail to match the peak-performance of their junior counterparts. This might be caused by the early specialization, overtraing, or (less than likely) just the personal development rate.

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STUDIA UBB EDUCATIO ARTIS GYMN., LX, 3, 2015, pp. 11 - 25
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WEIGHT TRAINING IN GYMS AS LEISURE TIME PHYSICAL ACTIVITY: THE PRACTITIONER PROFILE

VĂIDĂHĂZAN REMUS-CRISTIAN*[1], HANȚIU IACOB[1]

ABSTRACT. It is gratifying that people of all ages turn to exercise to improve physical fitness components. There is growing evidence that a balanced workout program, including a minimum weight training exercises, sufficient flexibility exercises and enough time for relaxation and recovery, provides long-term benefits (McLatchie, 1993). This type of training, practiced regularly, will reduce the risk of injury and illness (Westcott, 1996). "Currently, RT (resistance training) is a modality of exercise recommended for virtually everyone because it has been shown to enhance health, well-being, and performance in clinical, fitness, and athletic populations" (Ratamess Jr., 2012, p. 9). **Objective of the study:** The objective of this study was to build a profile for participants in weight training that takes place in gyms of Cluj-Napoca. **Methods:** The research was conducted from 14 August 2013 to 20 August 2014 in Cluj-Napoca's weight training gyms. The subjects are practitioners of all gyms where weight training is practised, and where we were granted access. 155 practitioners were interviewed. 47.74% refused participation to our study, and 52.26% accepted permission. For each of the 81 subjects was recorded only one session of training. **Conclusions:** Participation in weight training is done with appropriate frequency. In terms of exercise duration, for most of practitioners, it exceeds the maximum duration of 60 minutes recommended by the American College of Sports Medicine (American College of Sports Medicine, 1990). The small number of participants that correctly identified the muscles included in their workouts can be a signal for fitness instructors and personal trainers to insist more on the transmission of appropriate information needed to apply the principle of conscious participation. Most of practitioners do not give enough importance to periodization because they insert or exclude exercises after starting their training session. The number of sets chosen for the exercises suggests that almost all of our subjects limit to 3-4 sets for every exercise. In terms of planning the execution speed for repetitions, we found none of the practitioners to work with concept of tempo.

Key words: *fitness, weight training, practitioner fitness profile, leisure.*

[1] *Babeș-Bolyai University, Cluj-Napoca, Faculty of Physical Education and Sport, Doctoral School*
* *Corresponding Author: vaidahazan@gmail.com*

REZUMAT. ***Antrenamentul cu greutăți în sălile de fitness ca activitate fizică de timp liber: profilul practicantului.*** Este îmbucurător faptul că persoane de toate vârstele apelează la exercițiul fizic pentru îmbunătățirea componentelor fitnessului fizic. Sunt tot mai multe dovezi care atestă faptul că un program de antrenament echilibrat, cu suficiente exerciții de flexibilitate, cu minimum de exerciții specifice antrenamentului cu greutăți și cu timp suficient pentru relaxare și refacere, oferă beneficii pe termen lung (McLatchie, 1993). Acest tip de activitate fizică, practicată cu regularitate, va reduce riscul de accidentare și de îmbolnăvire (Westcott, 1996). „Antrenamentul cu greutăți este recomandat pentru toate categoriile de persoane deoarece s-a dovedit că îmbunătățește sănătatea, starea de bine și performanța" (Ratamess Jr., 2012, p. 9). **Obiectivul studiului:** Obiectivul acestui studiu a fost construirea profilului practicantului care participă la antrenamentul cu greutăți ce se desfășoară în sălile de fitness din Cluj-Napoca. **Subiecți și metode:** Cercetarea s-a desfășurat pe perioada unui an, din data de 14 august 2013 până în data de 20 august 2014, în sălile de fitness din Cluj-Napoca. Subiecții studiului au fost practicanți din toate sălile de fitness în care se efectuează antrenamente cu greutăți și în care ne-a fost acordat accesul, între 4 și 6 practicanți din fiecare sală de fitness. Au fost intervievați 155 de practicanți. 47,74% au refuzat participarea la studiu, 52,26% și-au dat acceptul, iar un practicant nu a folosit exerciții cu greutăți în antrenament în ziua când a fost înregistrat. **Concluzii:** Participarea la antrenamentul cu greutăți se face cu o frecvență adecvată. Durata antrenamentelor, pentru majoritatea practicanților, depășește durata 20-60 de minute, recomandată de către ACSM (American College of Sports Medicine, 1990). Numărul mic de participanți care au identificat corect grupele musculare poate fi un semnal pentru instructorii și antrenorii de fitness ca să insiste mai mult pe transmiterea informațiilor corespunzătoare pentru aplicarea principiului participării conștiente. Majoritatea practicanților nu acordă suficientă importanță planificării antrenamentului datorită faptului că introduc sau exclud exerciții în ședința de antrenament după începerea antrenamentului. Deoarece foarte mulți practicanți apelează la serviciile instructorilor din sălile de antrenament, este foarte important să avem instructori bine pregătiți în sălile de fitness pentru antrenamentele cu greutăți. Numărul de seturi ales pentru exerciții sugerează că subiecții incluși în cercetare se limitează doar la 3-4 seturi. În ceea ce privește planificarea vitezei de execuție pentru repetări, am constatat la practicanți că nu lucrează cu conceptul de tempo de execuție.

Cuvinte cheie: *fitness, antrenament cu greutăți, profil practicant fitness, timp liber.*

Introduction

In order to be able to aspire to a good health you should have a balanced lifestyle, you have to be a good organizer of your spare time. "Physically active individuals tend to be in better health, report more stamina, have more positive

attitudes toward work, and report a greater ability to cope with stress and tension than people who are not physically active" (Weinberg & Gould, 2006, p. 408).

It is gratifying that people of all ages turn to exercise to improve physical fitness components. There is growing evidence that a balanced workout program, including a minimum weight training exercises, sufficient flexibility exercises and enough time for relaxation and recovery, provides long-term benefits (McLatchie, 1993).

American College of Sports Medicine (ACSM) supports that ideal living arrangements ensuring the maintenance and development of the muscular system, the skeletal system and the hormonal system should include weight training exercises (Humphries, 2001). Bones, tendons, ligaments and cardiovascular system benefit from weight training exercises. This type of training, practiced regularly, will reduce the risk of injury and illness (Westcott, 1996). "Currently, RT (resistance training) is a modality of exercise recommended for virtually everyone because it has been shown to enhance health, well-being, and performance in clinical, fitness, and athletic populations" (Ratamess Jr., 2012, p. 9).

Bartek said in 1998 that participation in physical activity was two times a week (Barteck, 1998). The ideal start involves two training sessions per week, increasing the density of training only when the body is ready (Delavier & Gundill, 2012). It is recommended that you do not link more than three consecutive training sessions (i.e., three consecutive days of training) to give the body enough time to rest for recovery and regeneration (Cabral, 2012).

ACSM recommends, for most participants in physical activities, to train between 20 and 60 minutes (American College of Sports Medicine, 1990). After Westcott (1996) 20-30 minutes of weight training combined with 20-30 minutes of cardio training is a practical and productive combination for achieving optimum levels of fitness.

Some people who practice physical exercises relate only to consumption of body fat. Others are aware that the practice of physical exercise reduces the risk of disease. Many people participate to weight training, in their spare time, to increase their endurance and muscular strength; others want muscular hypertrophy, and a part of the population benefit from weight training as a form of rehabilitation (Ratamess Jr., 2012).

Knowing the reasons why people turn to gyms for weight training is important not only for fitness instructors, but also for managers of fitness gyms. Trainer influence over a practitioner is very important. A large number of practitioners rely on gym's instructors to build their fitness programmes.

ACSM recommends for the vast majority of practitioners a number of 8 to10 exercises for weight training sessions (American College of Sports Medicine, 2005). An advanced training program can include up to 20 exercises for a training session (Baech & Groves 1998).

Several studies have shown that the best results, with trained individuals were obtained when they worked with a number between 4 and 8 sets for muscle group, while the most effective number is 4 sets for beginners (Ratamess Jr., 2012).

ACSM recommends a speed of execution for all repetitions small to moderate for beginners and moderate for others, once you have enough experience (Ratamess Jr., 2012). Using the concept of tempo is very useful in quantifying the volume of effort. The effort's volume can also be expressed by referring to the time in which a muscle is under tension because changing the execution speed changes metabolic consumption. It is important to take into account the time under tension when we analyse the volume of effort because not all repetitions are done at the same speed of execution (Poliquin, 1997).

Objective of the study

The objective of this study was to build a profile for participants in weight training that takes place in gyms of Cluj-Napoca.

Methods

The research was conducted from 14 August 2013 to 20 August 2014 in Cluj-Napoca's weight training gyms. The subjects are practitioners of all gyms where weight training is practised, and where we were granted access. We registered between 4 and 6 practitioners in every gym. 155 practitioners were interviewed. 47.74% refused participation to our study, and 52.26% accepted permission. A practitioner didn't use weights in the day that we recorded his workout. Total number of registered subjects (subjects who used specific weight training exercises) was 81. To build the sample we used a non-random sampling as a member of the population probability of being selected in the sample could not be determined. For each of the 81 subjects was recorded only one session of training.

The data needed for research were recorded on a sheet of observation before and during the workout. The items recorded were: workout time, number of weight exercises, number of sets in the workout, rest intervals proposed by practitioners and rest intervals recorded by us.

Results

Of the 81 subjects 69.14% (56 subjects) were male and 30.86% (25 subjects) female, aged between 18 and 60 years. We present in Table no. 1 a distribution of subjects by age (N=81).

Table no. 1 - Distribution of subjects by age

	≤ 20 years	21-25 years	26-30 years	31-35 years	36-40 years	41-45 years	46-50 years	≥ 50 years
Subjects	7	22	24	10	7	2	1	8
Percentage	8.64	27.16	29.63	12.35	8.64	2.47	1.23	9.88

Levels of education (completed studies) are shown in Table no. 2 (N=81).

Table no. 2 - Distribution by level of education

	Gymnasium	High School	Faculty	Master
Subjects	6	25	28	22
Percentage	7.41	30.86	34.57	27.16

Practitioners in the study were asked how many times per week they practice weight training. Results can be viewed in Chart no. 1 (N=81).

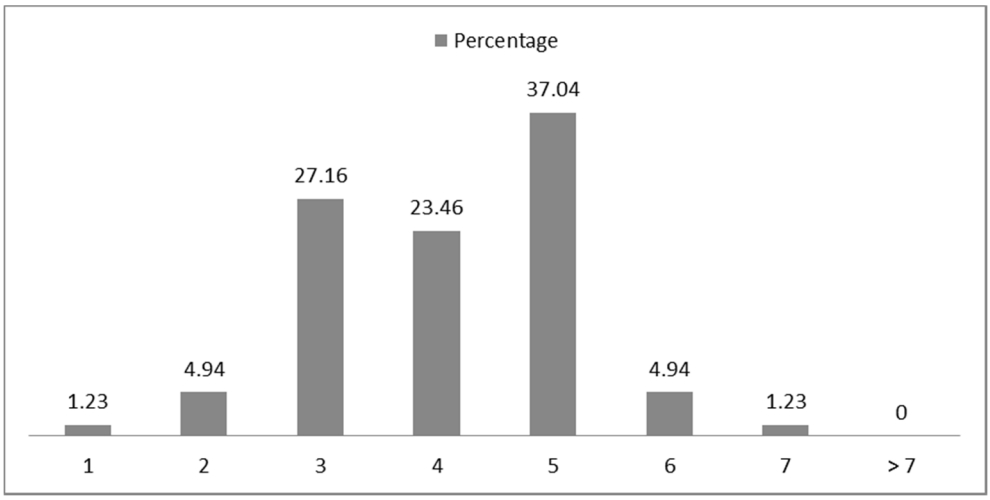

Chart no. 1 - Attendance to weight training, every week

The registered workout time was between 26 minutes and 133 minutes, with an average of 70.05 minutes. In Chart no. 2 it can be observed the workout time distribution (N=80).

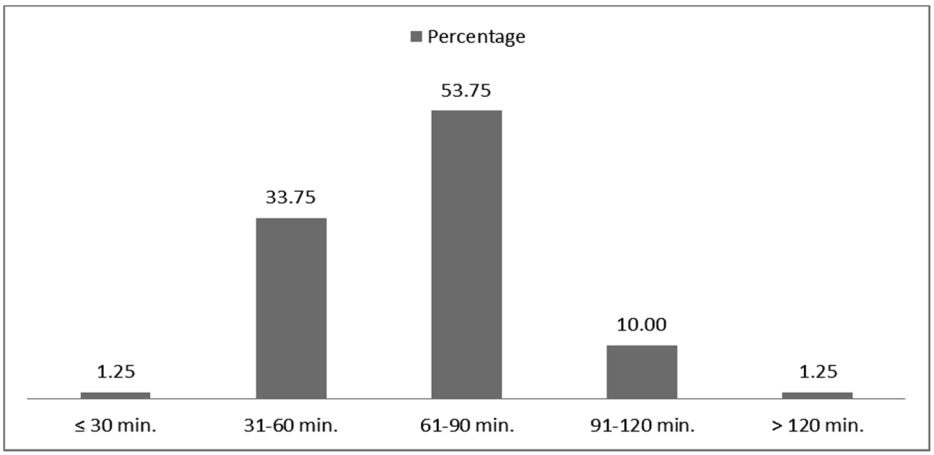

Chart no. 2 - Workout time distribution

Reasons for participating in weight training, as our subjects stated, are: Body maintenance, Muscle mass, Body fat reduction, Body toning, Muscle striation, Improvement of fitness, Maintenance of fitness, Health, Agility, Relaxation, Knee pain relief. The percentage distribution can be analysed in Chart no. 3 (N=81).

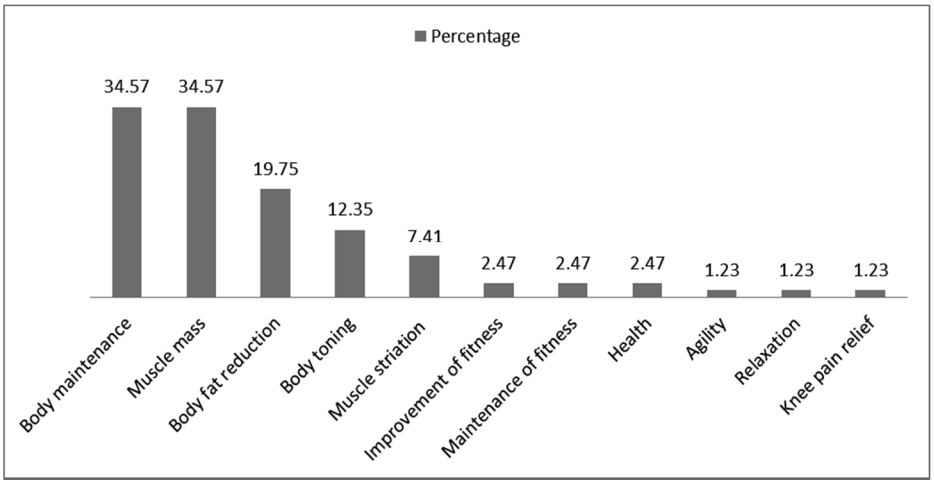

Chart no. 3 - Reasons for participating in weight training

From the methodical point of view we were interested if practitioners are able to correctly identify muscle groups that they have included in their programs. We were interested if they worked other muscles besides those proposed before training or if they have omitted some muscles from their programme training. These details can be observed in Table no. 3 (N=80) and Table no. 4 (N=80).

Table no. 3 - Percentage of muscles that have been appointed

	Only area of muscles correctly named (or muscles partially correctly named)	Muscle groups correctly named
Subjects	75	5
Percentage	93,75	6,25

Table no. 4 - Compliance of training plan regarding muscle groups included in it

	They worked other muscles besides those mentioned before workout	They didn't worked all muscles mentioned before workout
Subjects		
Percentage	42,50	8,75

Of the 81 practitioners, 28 (34.57%) have requested assistance from another person to build their workout (see Table no. 5, N=81).

Table no. 5 - Assistance in workout planning

	No	Yes
Subjects	53	28
Percentage	65,43	34,57

Among those who received assistance to build their workout many of them have turned to the instructor of fitness gym (see Chart no. 5, N=81).

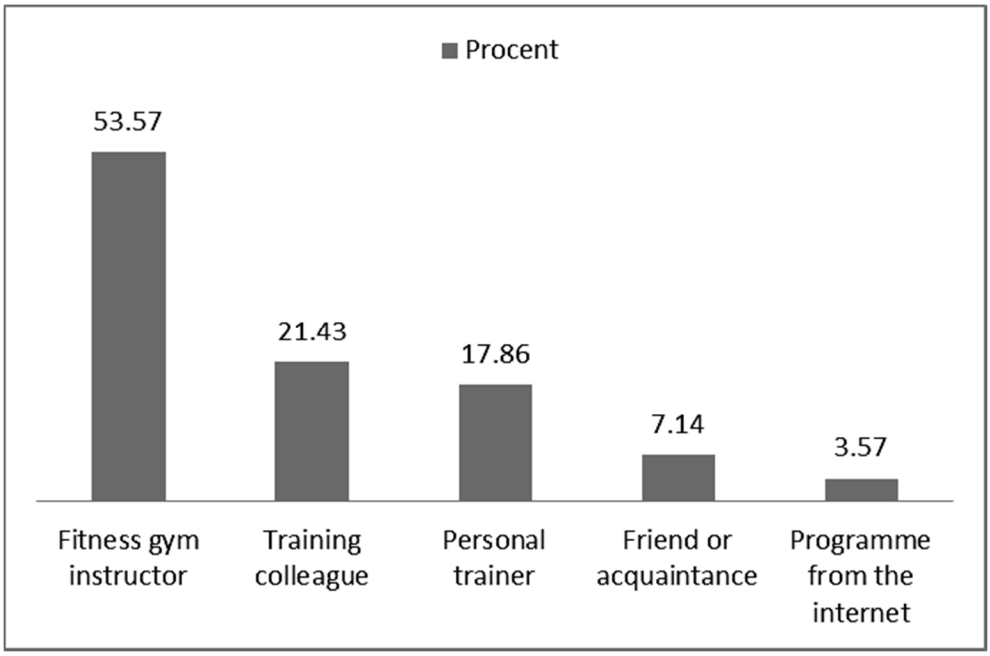

Chart no. 4 - Assistance for personal workout

We present in Table no. 6 (N=81) how often the practitioners refer to the following sources when they need information for weight training: training mates, internet (written sources), internet (audio, video), printed magazines, printed books, specialized courses accredited by an authority in the field.

Table no. 6 - Sources of information

	Never	Sometimes	Often	Very often
Training mates	17.28	48.15	28.40	6.17
Internet (written sources)	13.58	40.74	32.10	13.58
Internet (audio, video)	20.99	41.98	28.40	8.64
Printed magazines	49.38	35.80	9.88	4.94
Printed books	64.20	27.16	4.94	3.70
Specialized courses accredited by an authority in the field	77.78	17.28	2.47	2.47

As regards the cooperation with a personal trainer, 70.37% (57 subjects) of them have never appealed to the services of a personal trainer. We can track this distribution in Chart no. 5 (N=81).

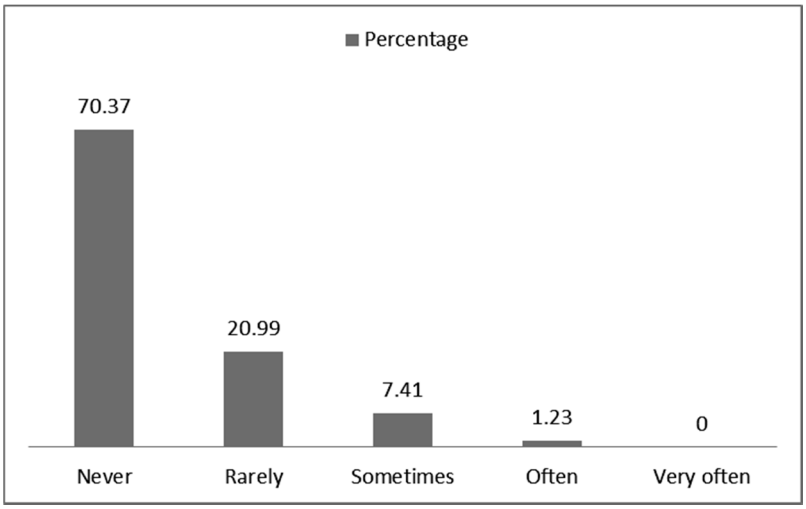

Chart no. 5 - Working with a personal trainer in the field

Practitioners were asked if they use dietary supplements to support the weight training exercise. 50.62% (41 practitioners) gave an affirmative answer and 49.38% (40 practitioners) said they do not use supplements to support specific exercise (N=81).

Using the observation chart, we recorded the number of exercises used by every practitioner in its personal training session. Distribution of the number of exercises used in training sessions can be traced in Chart no. 6 (N=80).

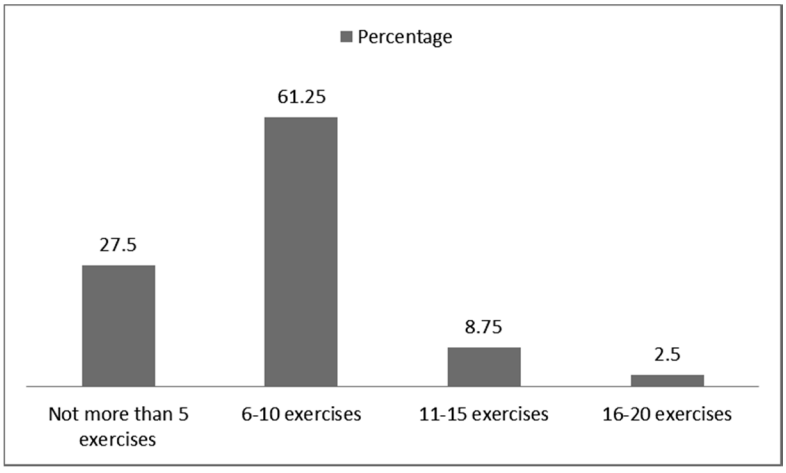

Chart no. 6 - Number of exercises used in training sessions

The number of sets used by practitioners in training sessions can be seen in Chart no. 7 (N=80).

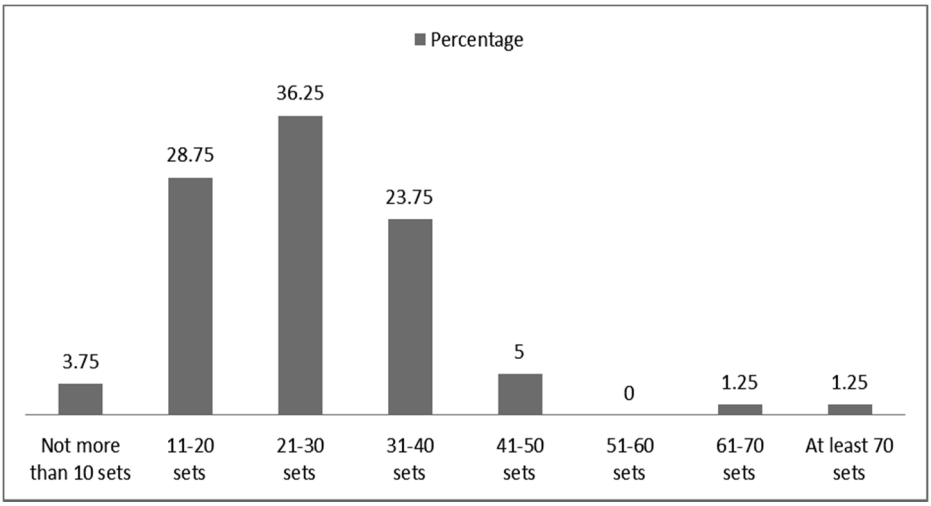

Chart no. 7 - The number of sets used in training sessions

The minimum and maximum number of sets per exercise, registered in the training sessions observed can be seen in Chart no. 8 (N=80) and Chart no. 9 (N=80).

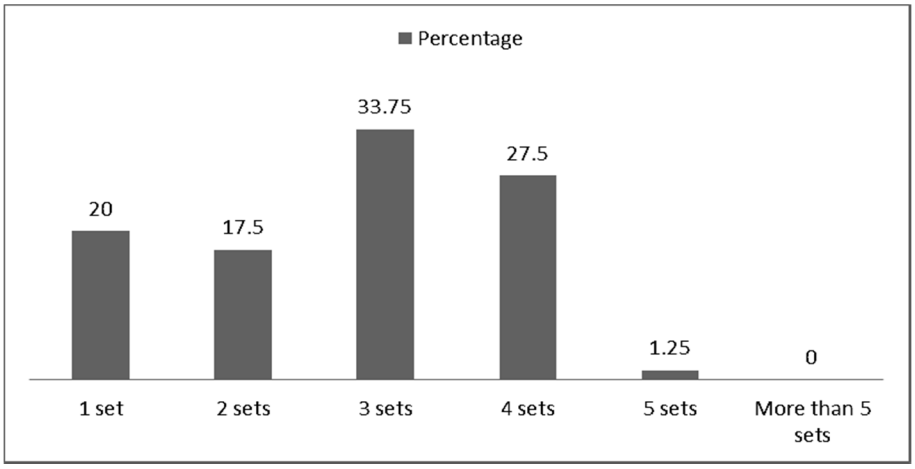

Chart no. 8 - The minimum number of sets / exercise

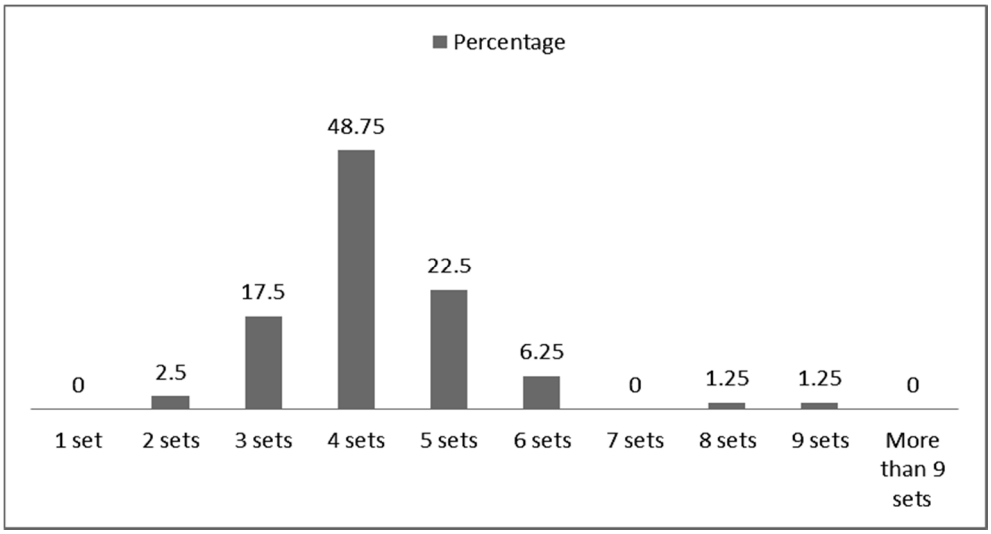

Chart no. 9 - The maximum number of sets / exercise

During our study we recorded the pattern of weight loading used by practitioners for each exercise. We recorded thus 6 models: Constant, Ascending, Ascending-Descending, Descending, Oscillating (or Waves), Descending-Ascending. Distribution of this model, depending on the personal style, can be traced in the Chart no. 10 (N=80).

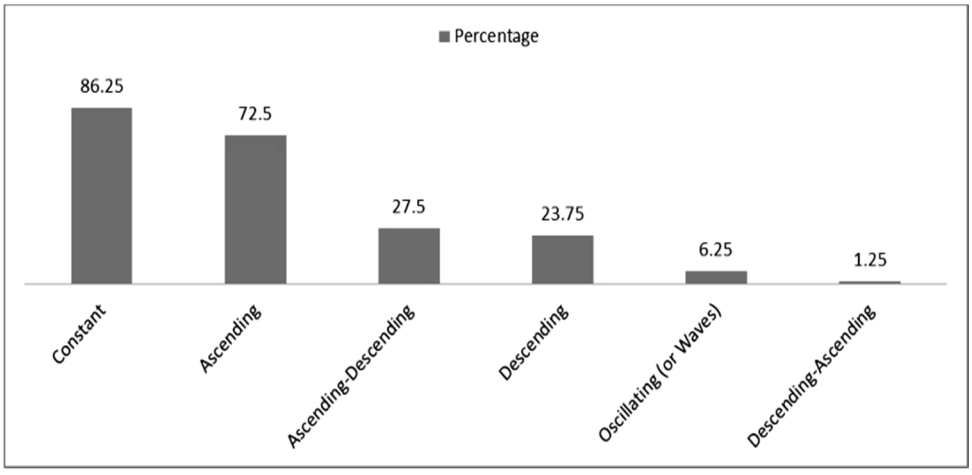

Chart no. 10 - The pattern of weight loading

There was recorded the execution speed for each subsequent repetition by dividing the duration of exercise to number of repetitions. We obtained, thus, a minimum of 0.5 second per repetition and a maximum of 10 seconds for a repetition. This distribution can be traced in Chart no. 11 (N=80).

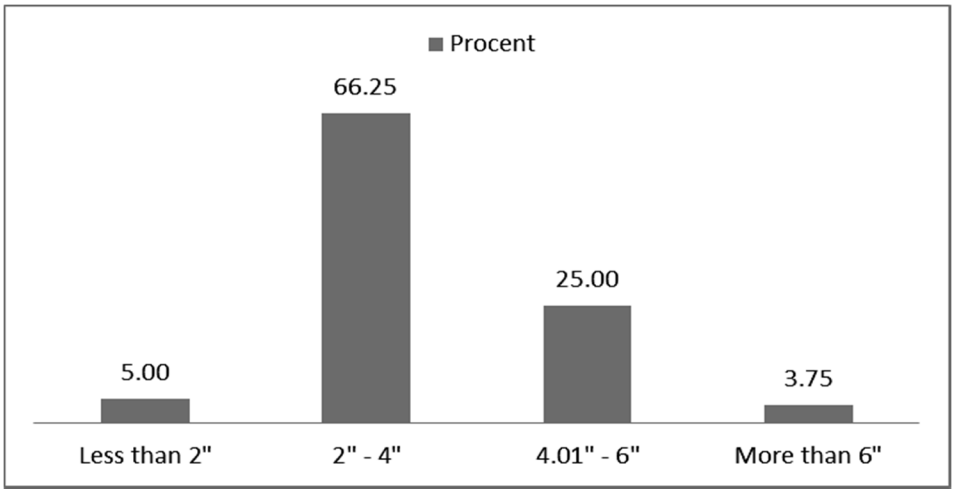

Chart no. 11 - Distribution of practitioners based on the execution period of repetitions

No practitioner has proposed a specific number of repetitions to use in the personal workout. We did not find any practitioner to use the concept of tempo (an exact speed of movement) for their repetitions.

Discussion

Table no. 7 shows the practitioners behaviour according to the criterion followed by our study.

Table no. 7 - Profile of practitioner in weight training

The criteria considered	Behaviour of our subjects
Participate in weight training ...	... 3, 4 or 5 times a week.
Total duration of the workouts ...	... Ranged from 61-90 minutes for most of practitioners.
Adhere to weight training ...	... For body maintenance; ... To increase muscle mass.

The criteria considered	Behaviour of our subjects
He/she knows what muscle groups are used in the exercises practiced ...	... Most often identifies the anatomical part; ... Very rarely identifies the main muscle involved in exercise performed.
Complies with the training program planned before ...	... Often they work other muscles in addition to those proposed; ... Sometimes omit certain muscles from those proposed for that training.
Planning the weight training workout ...	... Often turn to help of others, most often by the gym instructor.
Typically informs him/her about weight training ...	... Most frequently by the internet (written sources, audio, video); ... Seldom from printed books and never from specialized courses.
Working with a personal trainer in weight training ...	... It is avoided almost by all practitioners; ... The practitioners who had a collaboration with a personal trainer asked for help in the execution of the exercises included in the training program; ... Is the plan for most of practitioners. They want to be helped to perform the exercises correctly; ... Can help practitioners to achieve their objectives, argue almost all subjects.
Use of dietary supplements to support specific efforts ...	... Is done for half of practitioners surveyed; ... Includes between one and three supplements, for most of the practitioners.
Most practitioners include in their workout ...	... Between 6 and 10 exercises; ... Between 11 and 40 sets.
The minimum number of sets per exercise ...	... It is 3 or 4 for most of practitioners.
The maximum number of sets per exercise ...	... It is 4 for half of registered practitioners.
The pattern of weight loading ...	... Widely used by practitioners in weights training were Constant model and Ascending model.
The speed execution of repetitions ...	... For most of practitioners it is between two and four seconds.
Addressing a precise execution tempo for repetitions ...	... It was not encountered at any practitioner.

Conclusions

Participation in weight training is done with appropriate frequency. In terms of exercise duration, for most of practitioners, it exceeds the maximum duration of 60 minutes recommended by the American College of Sports Medicine (American College of Sports Medicine, 1990).

The small number of participants that correctly identified the muscles included in their workouts can be a signal for fitness instructors and personal trainers to insist more on the transmission of appropriate information needed to apply the principle of conscious participation.

As regards the compliance with the training program planned in advance, we can say that most of practitioners do not give enough importance to periodization because they insert or exclude exercises after starting their training session.

Because so many practitioners turn to services of instructors from fitness gyms, it is very important to have well-trained instructors in weight training gyms for workouts to be a success.

We believe that practitioners do not distinguish between the role of the gym's instructor and personal trainer as the main reason for working with the personal trainer is only to show them the correct form of exercise. It is necessary to improve and diversify strategies to educate the practitioners of weight training in order to understand the role and the importance of personal trainer in this field.

The number of sets chosen for the exercises suggests that almost all of our subjects limit to 3-4 sets for every exercise. Several studies have shown that the best results, with trained individuals, were obtained with a number between 4 and 8 sets for muscle group, while, for beginners, the most effective number of sets is 4 (Ratamess Jr., 2012).

In terms of planning the execution speed for repetitions, we found none of the practitioners to work with concept of tempo.

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TRX SUSPENSION TRAINING METHOD AND STATIC BALANCE IN JUNIOR BASKETBALL PLAYERS

BOROS-BALINT IULIANA[1], DEAK GRAŢIELA-FLAVIA[1*], MUŞAT SIMONA[1], PĂTRAŞCU ADRIAN[1]

ABSTRACT. Introduction: Described as an ingenious physical preparation method, suspension training was developed based on the concept of instability. This study was aimed at finding out if three weeks of TRX suspension training were enough to enhance static balance in junior basketball players. **Materials and methods:** Twelve male junior basketball players from the "U" Mobitelco club of Cluj-Napoca participated in this research. The subjects were randomly divided into two groups: Experimental (n=6) and Control (n=6). For three weeks, three TRX suspension training sessions per week were performed by all athletes from the Experimental group. Anthropometric measures (weight, height and arm span) were performed on all participants prior to suspension training. Static balance, assessed as the excursion of the center of pressure (COP), was measured with an AMTI® force platform (model BP400600, Advanced Mechanical Technology Inc., Watertown, MA, USA) on both legs, before and after the training period. **Results:** Mean age of participants was 13.33 ± 0.49 years, mean height was 173.05 ± 6.56 cm, mean weight was 59.14 ± 24.38 kg, and mean arm span was 171.58 ± 8.85 cm. No significant changes were found between the mean values of chosen COP parameters corresponding to the Experimental and to the Control group, respectively. **Conclusions:** Three weeks of TRX suspension training seem to be insufficient for modifications to occur in the static balance of junior basketball players. For future studies, a longer training period should be considered in order to see if there are any ways in which the TRX method affects static balance in junior athletes.

Keywords: static balance, center of pressure, TRX training method, junior basketball players

[1] *Babes-Bolyai University of Cluj-Napoca, Faculty of Physical Education and Sport*
* *Corresponding Author: gratiela.deak@ubbcluj.ro*

REZUMAT. ***Metoda de antrenament TRX şi echilibrul static la baschetbalişti juniori.*** **Introducere:** Descrisă ca o metodă ingenioasă de pregătire fizică, antrenamentul realizat prin suspensie a fost dezvoltat pe baza conceptului de instabilitate. Acest studiu a avut ca scop investigarea rezultatelor unui program de antrenament cu durata de trei săptămâni obţinut cu ajutorul sistemului TRX asupra echilibrului static al baschetbaliştilor juniori. **Materiale şi metode:** La acest studiu au participat doisprezece baschetbalişti juniori din cadrul clubului "U" Mobitelco din Cluj-Napoca. Participanţii au fost împărţiţi aleatoriu în două grupe: Experimentală (n=6) şi de Control (n=6). Timp de trei săptămâni, sportivii din grupa Experimentală au efectuat câte trei antrenamente pe săptămână utilizând TRX-ul. Înainte de perioada de antrenamente, toţii subiecţii studiului au participat la măsurători antropometrice (înălţime, greutate, anvergura braţelor). Echilibrul static, evaluat ca excursia centrului de presiune (CDP), a fost măsurat cu o platformă AMTI® (model BP400600, Advanced Mechanical Technology Inc., Watertown, MA, USA) în cazul ambelor membre inferioare, atât înainte cât şi după perioada de antrenamente. **Rezultate:** Vârsta medie a participanţilor a fost de 13.33 ± 0.49 ani, înălţimea medie a fost de 173.05 ± 6.56 cm, greutatea medie a fost de 59.14 ± 24.38 kg şi anvergura medie a braţelor a fost de 171.58 ± 8.85 cm. Nu s-au observat diferenţe semnificative din punct de vedere statistic între valorile medii ale parametrilor centrului de presiune corespunzători valorilor măsurate în cazul grupelor Experimentală şi, respectiv, de Control. **Concluzii:** Trei săptămâni de antrenament cu metoda TRX par a fi insuficiente pentru a fi observate modificări în ceea ce priveşte echilibrul static al baschetbaliştilor juniori. Pe viitor, ar trebui luată în calcul o perioadă de antrenament mai lungă pentru a investiga dacă există vreo modalitate în care antrenamentul cu TRX afectează echilibrul static al sportivilor juniori.

Cuvinte cheie: *echilibru static, centru de presiune, metoda de antrenament TRX, jucători de baschet juniori*

Introduction

Human beings maintain equilibrium by keeping their centre of gravity over their base of support. The ability of maintaining equilibrium is called balance (Browne & O'Hare, 2001). Balance can be physiologically assessed by measuring a human's sway. Calculating the displacement of a subject's centre of gravity (COG) is considered a direct method, while calculating the movement of a subject's centre of pressure (COP) is acknowledged as an indirect method of evaluating balance (Browne & O'Hare, 2001). In static or slow moving conditions, according to Winter (1995), cited by Browne & O'Hare (2001), the COP can approximate the COG.

Described as an ingenious training method, suspension training was developed based on the concept of instability. Performing exercises (push-ups) in conditions of instability leads to increased muscle activation, especially in rectus abdominis muscle (Calatayud et al., 2014). Regarding postural muscles, suspension training is considered an effective technique for enhancing their strength (Pastucha et al., 2012).

Objective

This study was aimed at finding out if three weeks of TRX suspension training were enough to enhance static balance in junior basketball players.

Materials and methods

Participants

The subjects of this research were twelve male junior basketball players from the "U" Mobitelco club of Cluj-Napoca. All known health risks associated with suspension training were explained to the participants and written informed consent was obtained from them. None of the subjects dropped out from the study. Research protocol was approved by the Ethics Committee of the Faculty of Physical Education and Sport, Babeş-Bolyai University of Cluj-Napoca.

Procedures

Designed as a randomized controlled trial, this study consisted of three weeks of training, three times per week, with the TRX® Suspension Trainer. The subjects were randomly divided into two groups: Experimental (n=6) and Control (n=6). The duration of a training session was approximately 45 minutes. After a general warm-up of about 10-15 minutes, the subjects from the Experimental group performed 15 exercises using the TRX® Suspension Trainer (15 minutes). Each training session was finalized with 10-15 minutes of stretching. The chosen TRX exercises targeted the lower body (ex: squats, sprinter starts, hamstring curls), the upper body (ex: back row, chest press), and the core (ex: suspended plank, suspended crunches).

Anthropometric measures (weight, height and arm span) were performed on all participants prior to suspension training. Static balance, assessed as the excursion of the center of pressure (COP), was measured with an AMTI® force platform (model BP400600, Advanced Mechanical Technology Inc., Watertown, MA, USA). A personal computer, the AMTI MSA-6 Amplifier System and an analog

data acquisition system (A/D converted at 16-bit resolution) were used to record the data. The force platform measured the three force components, Fx, Fy and Fz, and the three moment components, Mx, My and Mz (x, y and z are the medial–lateral, anterior–posterior and vertical directions, respectively) (Harringe, Halvorsen, Renström & Werner, 2008). Bioanalysis with Netforce, version 2.4.0 (AMTI's Biomechanics Software), was used to compute COP measurements. The COP parameters took into consideration were: 95% ellipse area (cm^2), mean COP anterior–posterior and medial–lateral direction (cm), and path length (cm).

Subjects were tested in conditions of unipodal stance (stance on one leg) and open eyes. Participants stood barefoot on the platform, with both left and right leg. They were asked to look straight ahead, to keep their arms relaxed and close to the trunk, and to flex their opposite lower limb. Data recording started as soon as the subject was positioned correctly on the platform and lasted for 30 s. The measurements were carried out both before and after the training period.

Analyses

Means, standard deviations and standard errors were calculated for all data. The independent-samples t-test was used to investigate whether there are significant differences between the two groups of subjects regarding the selected COP's parameters, and a paired-samples t-test was used to compare data recorded pre and post-training. A $p \leq 0.05$ was considered statistically significant. The analyses were carried out in IBM SPSS, version 20.0.

Results

Mean age of participants was 13.33 ± 0.49 years, mean height was 173.05 ± 6.56 cm, mean weight was 59.14 ± 24.38 kg, and mean arm span was 171.58 ± 8.85 cm. Table 1 presents the results of an independent-samples t-test applied to data recorded, before and after three weeks of training, from subjects belonging to both Experimental and Control group.

Table 1. Independence-samples t-test's results

COP's parameters	T1			T2		
	t	p	Mean Difference	t	p	Mean Difference
COP-X Avg (cm) - Left foot	0.891	0.406	1.28	-0.299	0.771	-0.38
COP-Y Avg (cm) - Left foot	0.633	0.541	0.27	-1.438	0.181	-2.50
95% Ellipse Area (cm^2) - Left foot	1.168	0.270	44.38	0.934	0.393	56.54
Path Length (cm) - Left foot	0.997	0.342	68.77	0.719	0.489	67.15

COP's parameters	T1			T2		
	t	p	Mean Difference	t	p	Mean Difference
COP-X Avg (cm) - Right foot	0.687	0.508	0.91	-0.350	0.734	-0.50
COP-Y Avg (cm) - Right foot	-0.367	0.722	-0.18	0.889	0.395	1.13
95% Ellipse Area (cm^2) - Right foot	0.995	0.365	30.99	0.995	0.365	41.07
Path Length (cm) - Right foot	0.846	0.418	63.09	1.005	0.338	139.58

* T1 – initial testing; T2 – final testing; p<=0.05

No significant changes were found between the mean values of chosen COP parameters corresponding to the Experimental and to the Control group, respectively.

Table 2 presents the results of a paired-samples t-test applied to data recorded from all participants, before and after three weeks of training. There are no significant changes between the mean values of chosen COP parameters computed from data recorded before and after the training period, for both groups of subjects (Experimental and Control).

Table 2. Paired-samples t-test's results

T1-T2	Experimental group			Control group		
	Mean	t	p	Mean	t	p
COP-X Avg (cm) - Left foot	1.41	-0.699	0.516	2.70	1.726	0.145
	1.91			1.52		
COP-Y Avg (cm) - Left foot	0.49	-1.738	0.143	0.77	1.633	0.163
	1.04			-1.45		
95% Ellipse Area (cm^2) - Left foot	16.68	-1.311	0.247	61.07	-0.709	0.510
	15.51			46.51		
Path Length (cm) - Left foot	170.52	-1.843	0.125	239.30	-1.836	0.126
	175.42			238.52		
COP-X Avg (cm) - Right foot	1.02	-1.293	0.253	1.94	0.643	0.548
	1.84			1.33		
COP-Y Avg (cm) - Right foot	-0.51	-1.134	0.308	-0.70	-1.533	0.186
	-0.24			0.88		
95% Ellipse Area (cm^2) - Right foot	15.51	0.046	0.965	46.51	-0.960	0.381
	15.42			56.50		
Path Length (cm) - Right foot	209.54	-0.725	0.501	276.69	-1.361	0.232
	188.02			327.60		

* p<=0.05

Mean values of COP's parameter entitled 95% Ellipse Area, corresponding to data recorded from unipodal stance (right leg), both before and after the training period, for all participants, are shown in Figure 1. Figure 2 has the same meaning as Figure 1, except data were recorded from unipodal stance (left leg).

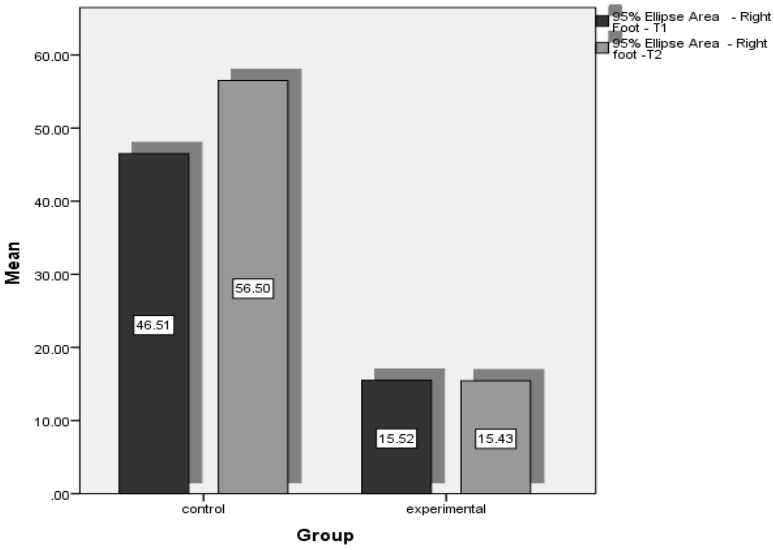

Figure 1. Mean values for 95% Ellipse Area (right leg)

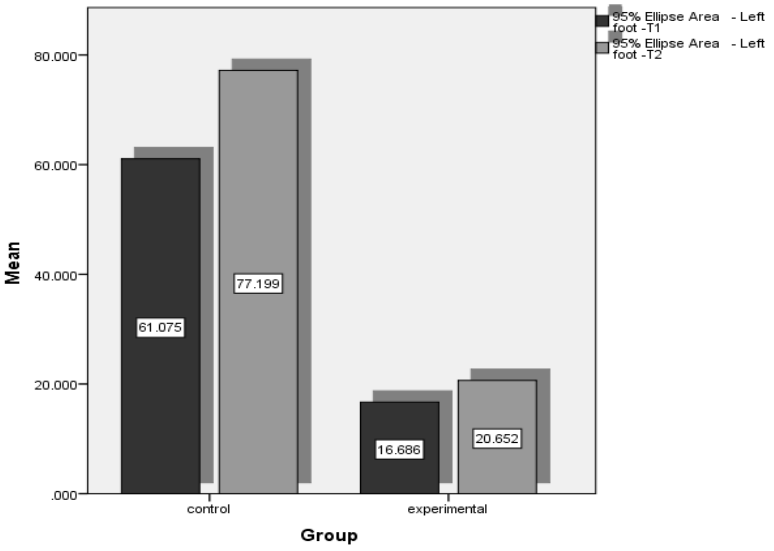

Figure 2. Mean values for 95% Ellipse Area (left leg)

Discussion and conclusions

In recent years, the interest expressed by sport scientists regarding suspension training grew proportionally with the increase in its popularity among coaches and athletes. The great majority of published studies approach muscle activation aspects during suspension exercise.

Pushing exercises were analyzed when performed traditionally and in suspension. Push-ups performed with TRX were associated with greater activation of torso muscles and with greater range of compression than traditional push-ups, but standard push-ups showed significantly higher shear force than TRX push-ups (McGill, Cannon & Andersen, 2014). Another study investigated the electromyographic activity of pectoralis major, anterior deltoid and triceps brachii during the performance of traditional and suspension push-ups. Results indicate that higher activation of the aforementioned muscles was recorded while participants performed suspension push-ups rather than when they performed traditional push-ups (Snarr & Esco, 2013).

Suspension training was proved to be beneficial for core muscles. Rectus abdominis, external oblique, internal oblique/transversus abdominis, and superficial lumbar multifidus presented higher activation levels during suspension training when compared with traditional training (Mok et al., 2014). The performance of a frontal plank exercise with a TRX® Suspension Trainer was documented to increase activation of abdominal muscles when compared to the floor based plank (Byrne et al., 2014).

To the extent of our knowledge, the present study is the first one to approach the effects of TRX® Suspension Trainer on static balance. Findings suggest that static balance parameters were not significantly improved by suspension training in junior basketball players. Thus, three weeks of TRX suspension training seem to be insufficient for modifications to occur in the static balance of junior basketball players. For future studies, a longer training period should be considered in order to see if there are any ways in which the TRX method affects static balance in junior athletes.

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THE INFLUENCE OF CLIMATE ON EXERCISE CAPACITY IN PATIENTS WITH CARDIOVASCULAR AND RESPIRATORY DISEASES – A CASE STUDY

STĂNESCU FELIX-MIHAIL[1]*, MOACĂ GABRIELA-MONICA[2]

ABSTRACT. In many temperate countries there is a very obvious seasonal variation in mortality, so winter death rates are 10-25% higher than in summer. The main causes of death in winter are cardiovascular pathologies, cerebrovascular, circulatory and respiratory. We believe that if we establish a relationship between alternating warm and cold seasons and exercise intensity and volume, in people with cardiovascular and respiratory diseases, then we can improve their exercise capacity and can prevent cardiovascular accidents. A patient 56 years old, female, diagnosed with angina of effort and asthma, followed a structured program of Physical Activity in an aquatic environment for 8 months (July 2014 - February 2015). Vital Capacity was evaluated by means of spirometry 2 times during the warm season and 2 times in cold weather. The workload declined by 50% in winter, and P.V.C. by 20%, while the intensity of effort perceived by the patient showed a slightly upward curve. Exercise capacity of a patient with significant restrictions on the cardio-respiratory system is reduced by up to 50% during the cold season versus values recorded during warm season.

Key words: *physical activity, exercise capacity, climate, cardio-respiratory diseases.*

REZUMAT. ***Influența climei asupra capacității de efort la pacienți cu patologii cardiovasculare și respiratorii – studiu de caz.*** În multe ţări temperate există o variație sezonieră a mortalității foarte evidentă, astfel încât ratele de deces din timpul iernii sunt cu 10-25% mai mari decât cele din timpul verii. Principalele cauze de deces iarna sunt patologiile cardiovasculare, cerebrovasculare, circulatoare și respiratorii. Stabilirea unei relații între alternanţa anotimpurilor călduros și rece și intensitatea, volumul efortului și capacitatea pulmonară la persoanele cu restricții ale sistemului cardio-respirator. Studiul a fost desfăşurat pe un pacient în vârstă

[1] *Institute of Scientific and Technological Multidisciplinary Research, Târgoviște, Romania*
[2] *"Valahia" University of Târgoviște, Faculty of Humanities, Târgoviște, Romania*
* *Corresponding Author: felixmihail@yahoo.com*

de 56 de ani, de sex feminin și diagnosticat cu anghină pectorală de efort și astm bronșic mixt persistent moderat, căruia i s-a creat un program personalizat de activitate fizică în mediul acvatic pe care l-a urmat pe o perioadă de 8 luni (iulie 2014 - februarie 2015). Și a fost evaluată Capacitatea Vitală prin metoda spirometriei astfel: 2 măsurători vara și 2 iarna (inițială, 2 intermediare și finală). Volumul de lucru a scăzut cu până la 50% în perioada sezonului rece. Capacitatea vitală a pacientului a scăzut în anotimpul rece cu 20%, Intensitatea efortului percepută de către pacient a înregistrat o curbă uşor ascendentă. Capacitatea de efort a unui pacient cu restricţii semnificative la nivelul aparatului cardio-respirator, se reduce cu până la 20% pe timpul sezonului rece faţă de valorile înregistrate în lunile călduroase.

Cuvinte cheie: *activitate fizică, capacitate de efort, climă, patologii cardio-respiratorii.*

Introduction

Population vulnerability and adjusting reaction: Researches on potential health effects caused by weather, climate variability and climate changes requires a great deal and is exposure of interest. Although often terms such as weather and climate are used interchangeably, but in fact they are different sides of the same spectrum. Weather is the complex and continuously changing the state of air taken into account, habitually, on a time scale of minutes, weeks and months. Researches on the impact of health influenced by variability and climate change aims to increase understanding of the potential risks and identify effective options for adaptation of human body to the surrounding environment. As a result of climate change extreme events are expected to become increasingly common, can have devastating effects on human society (Sakamoto, M.M., 1977). In many temperate countries there is a very obvious seasonal variation in mortality, so winter death rates are 10-25% higher than in summer (Laake, K. & Sverre, J.M., 1996). The main causes of winter deaths are cardiovascular pathologies, cerebrovascular, circulators and respiratory (Donaldson, G.C. et al., 1998). Social and behavioral adaptations to cold plays an important role in preventing deaths from cold weather in countries at high latitudes (West, R.R. & Lowe, C.R., 1976). Although it is well established that summer heat waves are associated with increased short-term mortality, degree of mortality associated cold season directly attributed to stress caused by bad weather is difficult to be determined and currently is intensely debated. „ Whoever wishes to investigate medicine properly, should do so: first consider the seasons and what effects they produce each, are not all the same and differ greatly from one another in terms of changes that occur" (Hippocrates, 1978). Greek physician Hippocrates (400 b.J.)

described the link between certain epidemics and climate changes caused by the seasons. He wrote that physicians should take into account the seasons and the diseases they produce, characteristics and country-specific wind intensity and its water quality.

Exercise capacity is changing with the seasons, so that human body requiring longer periods to accommodate and adaptation to thermal values characteristic of the new season. Physical activity programs oriented to subjects diagnosed with diseases affecting the cardiovascular and respiratory systems, should be doing so patient to feel the same intensity as in previous season, thus require an adjustment of workload.

Hypothesis

We believe that if we observe the influence of alternating seasons on human body then we can adapt (modify) indicators of effort adaptation according to observed reactions. We believe that large differences temp may significantly change physiological parameters of effort elderly people.

Purpose

Establishing a relationship between the alternation of seasons and the intensity, volume of effort and pulmonary capacity to persons with restricted at cardio-respiratory system level. Improving patient's exercise capacity and prevention of cardiovascular accidents.

Objectives

1. scientific records search area
2. medical history of the patient review
3. setting intervention protocol
4. programming assessment
5. periodization and planning sessions
6. monitoring heart rate and distance
7. observing seasons influence on physiological indices
8. comparing intensity and workload between mezocicles
9. centralization results
10. analysis and conclusions of study

Methods and means

The study was conducted on a patient aged 56 years, female, that after a cardiac rehabilitation and respiratory recovery program in the aquatic environment last 12 months (Pîrvan, A., 2015). The subject was diagnosed with angina of effort and moderate persistent mixed bronchial asthma, which there was created a Physical Activity program in the aquatic environment (Stănescu, F.M., 2014), at a dose of 3 sessions / week, 90 min. each other, followed a period of 8 months (July 2014 - February 2015).

Pulmonary Vital Capacity was evaluated by means of spirometry 4 times, as follows: 2 measures summer and 2 winter (initial, 2 intermediate and final). Exercise intensity was monitored with a Heart Rate watch set by the subject data: sex, age, height, weight. The volume was measured in meters- distance covered during recovery and rehabilitation swimming sessions.

Had planned aerobic activity character, it is framed in bioenergy lipolytic zone, with a maximum intensity of effort between 130- 135 bpm and 150 bpm, having as main energy substrate fatty acids. The workload was between 1000 and 1400 meters swim session.

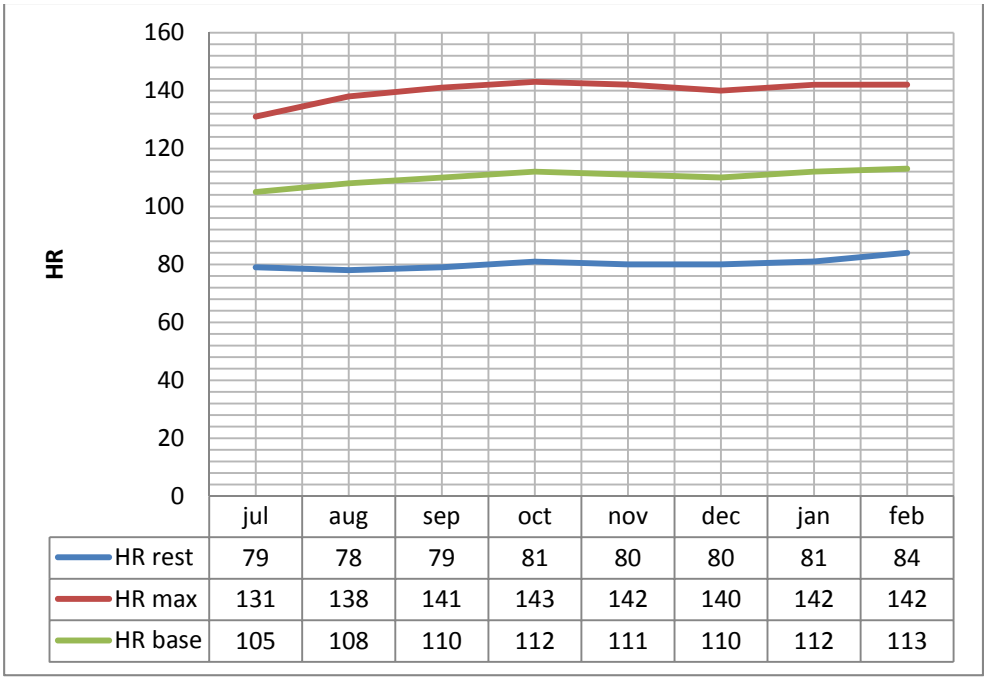
The PA program model was one of "waves" volume, which followed a "staged" protocol progression mezocicle level, taking into account the circadian rhythms of the patient and to avoid a forced adaptation to effort (see Table no. 1). Were used as swimming auxiliary materials as: kickboards, fins and hand paddles, pullbuoy etc… The activity was deployed in a moist and warm environment, from a semi-olympic sized swimming pool, where the ambiental temperature is 25° C and the water is 30° C, and the concentration of chlorine in water is 1.5 grams / liter.

Table no. 1- Model of progression

micro 1	micro 2	micro 3	micro 4
development	maintenance	development	recovery

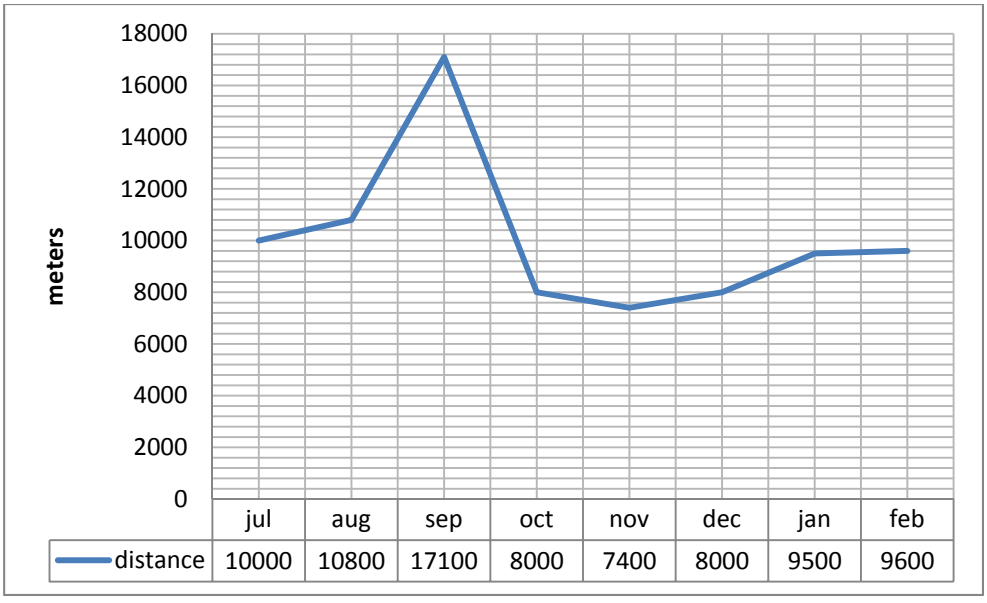
Results

Volume in the covered swimming distance on mezocicles, decreased by 60% during the cold season (see Graph no. 2). Exercise intensity expressed by the HR three indices (minimum, maximum and basal) not registered significant changes, as follows: HR at Rest remained unchanged throughout the program, the other two showed a slightly upward curve (see Graph no. 1). Patient PVC decreased in cold weather up to 20% compared to maximum peek recorded in warm weather (see Graph no. 3).



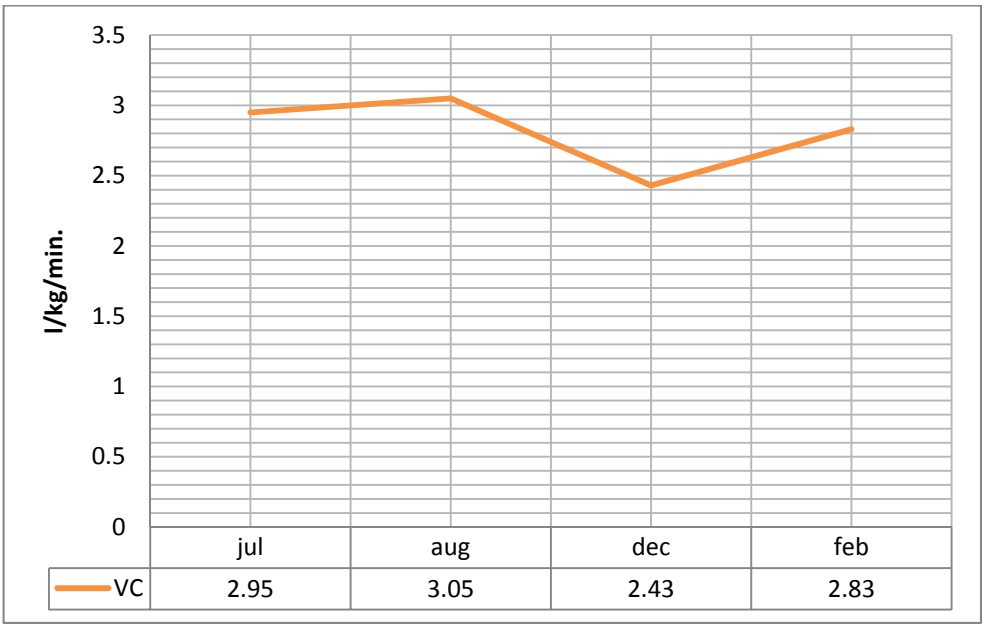
	jul	aug	sep	oct	nov	dec	jan	feb
HR rest	79	78	79	81	80	80	81	84
HR max	131	138	141	143	142	140	142	142
HR base	105	108	110	112	111	110	112	113

Graph no. 1- Intensity



	jul	aug	sep	oct	nov	dec	jan	feb
distance	10000	10800	17100	8000	7400	8000	9500	9600

Graph no. 2- Volume



Graph no. 3- Pulmonary Vital Capacity

Discussions

The workload declined by 60% in winter, and P.V.C. by 20%, while the intensity of effort perceived by the patient showed a slightly upward curve. In warm season the patient is able to bear a double workout volume at the same intensity of effort in cold season. There is an obvious relationship between the volume decrease and reducing PVC between seasons, this is the main factor influencing the patient's exercise capacity. During the cold season is slower progression, functional adaptations to exercise need a longer time, and post exercise recovery periods are longer.

Conclusions and suggestions

Exercise capacity of a patient with significant restrictions on the cardio-respiratory system is reduced by up to 20% during the cold season versus values recorded during warm season.

It is very important that observation when planning PA to a subject with such characteristics, forcing specialist who creates the program to take into account the season in which it is to operate. This will be reflected in the value it

will have workload volume. To check the correctness of sessions planned load is recommended to continuously monitor cardiovascular response during exercise. A valid and reliable indicator is HR which can be controlled with a HR watch.

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DEVELOPMENT OF PSYCHOMOTOR APTITUDE – THE BALANCE – BY EXERCISES SPECIALLY CREATED WITHIN THE FRAMEWORK OF THE BASKETBALL DISCIPLINE IN THE 5TH AND 6TH FORMS PUPILS

PAŞCAN ADRIAN[1]*, PAŞCAN IOAN[1]

ABSTRACT. Due to the importance of the ability - balance - in the basketball game, this paper presents a series of exercises for improving this psychomotor skills. During the first phase specific exercises as responses to different signals were conceived under our guidance with the entire class, which were then practiced. During a second phase, after having understood the task, the children split into teams needed to conceive similar exercises. The most significant were then practiced with the entire class. The research had been comprised of four phases: a pretest, a test during which independent variables were applied, followed by a final evaluation, and at the end a final test. The results of the research have shown that the exercises used contributed to the improvement of balance and we recommend that they should be used during physical education classes, mentioning that these are to be adapted and even supplemented according to the age of the children, the existing infrastructure and their training level. This paper presents the most significant exercises conceived and applied to the trial group.

Keywords: *trial, balance, specific exercises, psychomotor aptitude.*

REZUMAT. ***Exerciţii pentru dezvoltarea aptitudinii psihomotrice - echilibrul - prin exerciţii special create în cadrul disciplinei baschet la clasele V-VI.*** Datorită importanţei în jocul de baschet a echilibrului, această lucrare prezintă o serie de exerciţii care să dezvolte această aptitudine. În prima fază, sub îndrumarea noastră, au fost concepute şi s-au exersat exerciţii specifice, urmând ca, în faza a doua, după înţelegerea sarcinii, elevii împărţiţi în formaţii de lucru să conceapă exerciţii analoage, cele mai semnificative fiind exersate cu toată clasa. Cercetarea a cuprins patru etape: un preexperiment, un experiment în care s-au aplicat variabilele independente, urmate de o evaluare finală, iar la sfârşit un retest. Rezultatele cercetării ne-au demonstrat faptul că exerciţiile folosite au contribuit la dezvoltarea echilibrului şi recomandăm utilizarea lor în lecţiile de educaţie fizică, cu precizarea că aceste exerciţii să fie adaptate şi chiar completate în conformitate cu vârsta elevilor, baza materială existentă şi nivelul lor de pregătire. Lucrarea de faţă prezintă cele mai semnificative exerciţii create şi aplicate lotului experimental.

Cuvinte cheie: *experiment, echilibru, exerciţii specifice, aptitudine psihomotrică.*

[1] *„Babes-Bolyai'' University Cluj-Napoca, Faculty of Physical Education and Sport*
* *Corresponding Author: padrianclaudiu@yahoo.com*

Introduction

Balance is an indispensable mechanic condition of motility and a basic function in the practical activity, static and dynamic of man. This function provides the stability of positions and orientation of the movements on space coordinate, strengthening and directing interrelation between body and environment. Without balance, the body would remain under the influence of blinded forces, internal or external.

The stability is determined by the following factors:

- the size of the polygon support;
- the position of the center of gravity as against the base support;
- the distance between the center of gravity of the body and the support surface.

The sense of balance improves under the influence of practicing physic exercises and especially those specific ones.

Hypothesis

We consider that by applying an appropriate strategy, pupils from secondary school (together with the teacher) can conceive specific exercises for the improvement of the ability: balance.

Material and methods

Location

The trail took place at "Nicolae Titulescu" school from Cluj-Napoca. The school is well equipped for meeting the demands of the school curriculum for basketball.

The school dispose two basketball hall: one inside and the other outside, special arranged intended for instruction process of basketball.

Subjects of the trial

Pupils from grades V and VI of "Nicolae Titulescu" school Cluj-Napoca were subjects in the trial.

Number of sample of the form Table no.1:

Grade	Boys		Girls		Sum
	Trial	Control	Trial	Control	
V.	14	14	14	14	56
VI.	13	13	12	12	50
Sum	27	27	26	26	106

106 pupils took part in the trial, 52 girls and 54 boys, equally divided into trail groups and control groups.

The trial groups were made up of pupils from grades V A and VI B, and the control groups of pupils from groups V B and VI A.

Organization, phases and development of the trial

The trail took place under normal conditions during the physical education classes with focus on (learning topics) basketball, according to the structure of the school year, split into semesters and focusing on the suggested work hypothesis.

The trail took place during April - June 2013
The trial consisted of 4 phases:
Phase no. 1 – *pre-trail:* April, 10th – 14th 2013.
Phase no. 2 – *trial* (per se): April, 15th – May, 15th 2013.
Phase no. 3 – *post-trial:* May, 18th –22th.
Phase no. 4 – *retesting* June, 5th – 12th 2013

Investigation Methods

The ability to maintain balance on one leg is tested by maintaining balance on a special device. The balance rail is a piece of wood, 4 inches thick, 2 inches wide and 60 cm long.

With hands on hips, the subject climb device on one leg (optional), so that the longitudinal axis of the foot is parallel to the longitudinal axis of the rail. The other leg is bent back, about 45-50 degrees, without touching the device.

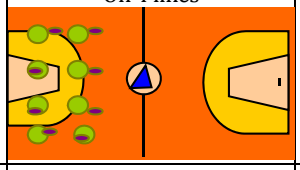
In this position, the performer is trying to maintain balance as long as possible with the eyes closed. Position obtained was timed. The timer stops when one of these deviations happens: the performer touched the ground with his free foot, descended from the device, lifted his hands on hip and opened his eyes.

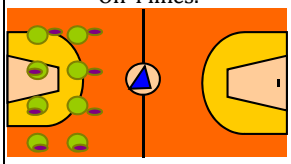
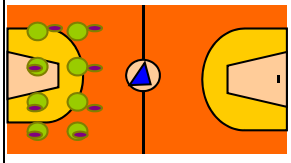
The subject is entitled to two attempts and the best time in seconds and tenths of seconds is recorded.

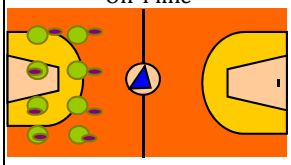
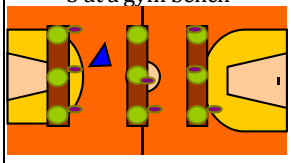
In parts 2, 3 of the lesson and in the fundamental part 5 (actual trial), during each lesson the improvement of the ability was especially trained for 10 – 12 minutes. During the first phase specific exercises as responses to different signals were conceived under our guidance with the entire class, which were then practiced. During a second phase, after having understood the task, the children split into teams needed to conceive similar exercises. The most significant were then practiced with the entire class, using up front practicing.

In the following we present the most significant exercises conceived and applied to the trial group.

EXERCISES CONCEIVED AND APPLIED TO GRADES V A AND VI B

No.	Initial position	Content of the exercise	Dosage	Work format	Training forms
1	Support squat, hands supported on the ball	Stand on one leg (at choice) the other lifted high backwards, ball up forward with the trunk slightly bent forward.	4 X	On 4 lines 	Up front practice
2	On knees	Getting on knee front support (at choice), the other leg raised up backwards (balance on one knee), maintaining the position for 3 sec	4 X	On 4 lines	Up front practice individual pace
3	Standing with eyes closed, ball in front of the body	Lifting on tiptoes and maintaining position 6-8 seconds. Variant: - inserting the rotating of the ball around the hip - inserting the bouncing and catching the ball	4 X	On 4 lines	Up front practice individual pace

4	Standing with eyes closed, holding the ball in front of the body	Lifting one leg in one direction and arms in main and intermediate directions.	6 X	On 4 lines. 	Up front practice individual pace
5	Stand on the narrow side of the gymnastics bench	Eyes closures, ball rises forward and maintaining position 5-6 seconds.	4 X	Groups of 4 on each bench	Working in groups
6	Stand on medicinal ball	Lift in standing on tiptoes, than on heels alternately (with or without rotating the ball around the hip).	10 X	On 4 lines	Up front practice individual pace
7	Stand on medicinal ball	Lifting a leg in one direction, at choice with different movements of the arms.	6 X	On 4 lines	Up front practice individual pace
8	Stand on medicinal ball, eyes closed	Bending knees into tucked position followed by getting back into the initial position ↳ Variant: - from tucked position the student will dribble the ball 4 times with one arm followed by standing, then getting back into the tucked position and performing another 4 bouncings with the other arm (this drill is made with eyes closed)	6 X	On 4 lines 	Up front practice individual pace
9	Stand on medicinal ball	360 degree turn to the right, then turn to the left by stepping (successive steps) ↳ Variant: - same drill with dribbling the ball	4 X	On 3 lines	Up front practice individual pace
10	Standing	Standing dribbling while getting into tiptoes, followed by getting on the heals, with the knees bent.	10 X	On 4 lines	Up front practice individual pace

11	Standing on right leg, the left one slightly raised forward	Dribbling the ball with the right arm followed by the left arm (alternativ). ↳ Variant: - dribbling the ball from one hand to the other through the front - while dribbling, getting on tiptoes and then on heel.		On 4 line 	Up front practice individual pace
12	Standing	Walking on tiptoes with dribbling on a 20 m distance.	3 X	4 in a row	Up front practice on rows
13	Standing	Dribbling by walking on a straight line (facing forward, then backward towards the direction of movement), on a distance of 10 m.	2 X	4 in a row	Up front practice on rows
14	Standing, eyes closed.	Dribble the ball, while lifting on tiptoes and maintaining the position 6-8 seconds.	4 X	On 4 lines	Up front practice individual pace
15	Standing on the narrow side of the gymnastics bench	5-6 seconds standing dribbling (knees slightly bent), followed by catching and holding the ball in both hands, with eyes closed for 4 seconds.	4 X	3 at a gym bench 	Up front practice individual pace
16	Stand on medicinal ball	Standing dribbling, (knees slightly bent), followed by catching and holding the ball in both hands, with eyes closed for 4 seconds. ↳ Variant: the ball is not held in hands, but continuous dribbling.	8 X	On 4 lines	Up front practice individual pace

Results

Statistic indicators regarding the "Static balance" - Trial group (boys) Table no.3:

Cls	Trial group								
	Average			S.D			C.V.		
	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
V	**2,702**	**3,714**	**3,45**	**0,552**	**0,358**	**0,45**	**20.4**	**11,64**	**13,2**
VI	**2,250**	**3,046**	**3,02**	0,45	0,398	0,42	**20**	**13,09**	**13,1**

Statistic indicators regarding the "Static balance" - Control group (boys) Table no.4:

Control group								
Average			S.D			C.V.		
T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
2,76	**2,86**	**2,82**	**0,675**	**0,607**	**0,61**	**24,48**	**21,25**	**21,27**
2,35	**2,6**	**2,61**	1,052	1,001	1,035	**44,76**	**38,5**	**38,3**

Statistic indicators regarding the ''Static balance'' - Trial group (girls) Table no.5:

Cls	Trial group								
	Average			S.D			Average		
	T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
V	**2,71**	**3,34**	**3,17**	**0,51**	**0,83**	**0,78**	**18,8**	**25,06**	**24,1**
VI	**2,3**	**2,92**	**2,8**	0,58	0,74	0,76	**25,5**	**25,54**	**23,0**

Statistic indicators regarding the ''Static balance'' - Contrl group (girls) Table no.6:

Control group								
S.D			Average			S.D		
T1	T2	Ret.	T1	T2	Ret.	T1	T2	Ret.
2,79	**2,86**	**2,82**	0,502	0,40	**0,44**	**18**	**14**	**15,7**
2,34	**2,47**	**2,5**	0,773	0,74	0,76	**33,0**	**30,2**	**27,1**

Significance of the difference between the average in trail groups Table no.7:

Grade	Test "t" student
Grade V boys	2,9
Grade V girls	2,2
Grade VI boys	2,1
Grade VI girls	2,3

With the boys' groups the average indicates significant progress from T1 to T2 for the entire trial group. (Figure no. 1)

The variability coefficient indicates high homogeneity in T2 for the trial groups and T1 control groups and medium homogeneity in T1 in the trial groups and T2 groups.

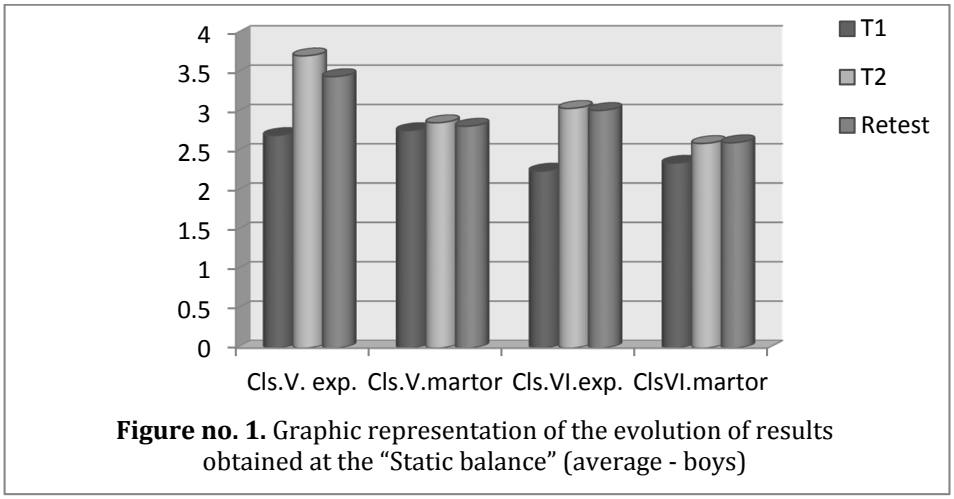


Figure no. 1. Graphic representation of the evolution of results obtained at the "Static balance" (average - boys)

The girls' trial groups show better values of the average in T2 as compared to T1 (Figure no. 2).

The variability coefficient shows medium homogeneity in all research groups.

During the retesting all grades of the research, except grade VI girls' control group, show a setback.

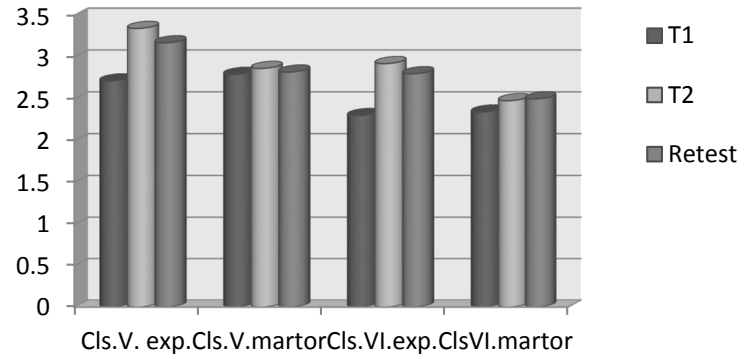


Figure no. 2. Graphic representation of the evolution of results obtained at the "Static balance" (average - girls)

Grade VI trial groups record a more significant improvement than grade V trial groups.

The calculated value of "t" is higher with all trail groups than the value of "t" at the significance boundary P=0,05, except grade V boys, where it is higher event that value "t" at boundary of 0,02.

So, the hypothesis is infirmed, as the differences between the averages of the results are statistically significant.

Conclusions

1. Based on the date results, we can confirm that the exercises conceived and applied are efficient and contribute to the improvement of accuracy and orientation of the body in space, which are necessary to play basketball.

2. Comparing the trial's results, we had observed the fact that the more were the attitude of students positive the higher were the results.

3. The retest results point the necessity of sustained practice of exercises, otherwise, the level of development of the psychomotor aptitudes decrease.

4. For the most part, the "t" test highlight a significant parameter on the probability of 0,05% and in some cases even at 0,02%, which reinforce the fact that the results are not accidental.

5. The results of the research show that the exercises, which were practiced, contributed to the improvement of accuracy and body orientation in space and we recommend that they are used during physical education classes, mentioning that these are to be adapted and even supplemented according to the age of the children, the existing infrastructure and their training level.

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THE TRAINING TO IMPROVE SPEED YOSHINKAN AIKIDO

BOGDAN VASILE, POP ALEXANDRA, BARBOŞ PETRE-ION[1]*

ABSTRACT. Introduction. Aikido, "the way of harmony and love, containing techniques for developing balance, coordination body (joint techniques, throwing, pivot)". It is approached at early ages, being a branch of sport much favored by children at young ages 6-10 years. This sub-branch of martial arts, due to exoticism, of how it is perceived by the little children produce emulation attracts to practice of a lots of children. On the on the one hand because of the "mysteries" that accompany this sport, on the other hand due to the instructive accompanying it. Among the many branches of martial arts, where some have the tendency more strongly to only focus on technical training, ignoring physical training, other martial arts ignore even preparing locomotor system, to practice safely this art, some even preparing musculoskeletal the practice safely this art. Current Aikido (Aikido Yoshinkan and Takemutsu) maintained in the training program and attaches the utmost importance of physical training: by approaching varied means of physical training for all age levels. Even for young children, a fact demonstrated in the pilot experiment conducted in 2012, the first program launched in Romania in the private school "***Happy Kids***", today "***Transylvania College, Cambridge International School-Cluj***". This article proposes practitioners a set of athletics exercises in order to strengthen speed, with its forms of expression. By practicing these means of athletic, 2-3 times a week, can obtain high values of this quality (if there is genetic determinations), while in generally, give positive results in improving the biometric qualities, but also the correction of some posts balance or even fighting techniques.

Keywords: *Speed, strength, stamina, aikido, Saito sensei, Kata, Koshi-nage, discipline, balance, coordination.*

REZUMAT. ***Antrenamentul pentru perfecţionarea vitezei în Yoshinkan aikido.*** Yoshinkan Aikido este o ramură a aikido-ului care urmărește, pe lângă pregătirea tehnică, şi perfecţionarea calităţilor motrice de bază şi specifice. Scopul acestui studiu a fost de a stabilii raportul de performanţă între elevii care practică sistematic forme de pregătire specifice atletismului (alergare de viteză) și cei care practică doar tehnicile aikido-ului. **Materiale şi metode.** 20 de elevi voluntari din fosta

[1] *University of Babes-Bolyai, Faculty of Physical Education and Sport, Cluj-Napoca, Romania*
* *Corresponding Author: petrebarbos@yahoo.com*

școala *"Happy Kids"*, astăzi "*Transylvania College, Cambridge International School-Cluj"*. Au fost executate măsurători antropometrice (greutate, înălțime). Toți subiecții au efectuat două teste: 1. *Testul „Transfer" 2. Testul „Bip"* în urma căruia s-a constatat că viteza era cuprinsă între 18 și 48 de secunde la primul test, în timp ce la al doilea test fiind de 1,3 și 3,6 secunde, la grupul de control. La testul final, grupa de control a obținut un rezultat superior, înregistrând chiar și 10 secunde mai puțin decât la prima testare. **Concluzii:** creșterea vitezei de reacție, deosebit de importantă în artele marțiale a fost vizibil superioară odată cu introducerea alergării de viteză din atletism. Totuși, un punct negativ al acestei cercetări este că cercetarea a fost realizată pentru o perioadă scurtă de timp (3 luni) și nu știm în ce măsură aceste îmbunătățiri ale vitezei se pot menține în timp. De asemenea ar fi important de cercetat efectul antrenamentelor de acest tip și la adulți, unde parametrii ar trebui să fie diferiți.

Cuvinte cheie: *Viteză, forță, rezistență, aikido, Saito sensei, Kata, Koshi-nage, disciplină, echilibru, coordonare.*

Introduction

The current aikido largest share in the initiation or advanced training, practice consists of a series of conventional techniques in the form of Kata (pattern), but often the techniques have no connection with combat situations, and practice only Kata can lead to distortion of reality. *(Kata - are pre-arranged forms that come from Japanese medieval periods. Their correct practice can bring significant improvement of techniques.) (Authors Note)*

We see numerous demonstrations practitioners executing some simulations of combat and the opponent is thrown very easily in all directions. The majority of those that operate training in this form they are confident in their results they will get (a component more psychological than physical) but without consistency or predictability certain.

In reality the works are much different and not just the mere repetition of some techniques, as in *Uchi Komi*. When a Grand Master *Uyeshiba Morihei* (1883-1967) has developed this martial art, he pursued two important aspects: effectiveness fighting techniques, even for a person with a physically less strong, and avoid applying brute force to thwart an attack *(Ueshiba, Morihei, 1998).*

In fact these situations demonstrate the effectiveness of this martial art, the possibility of efficient to the maximum of human potential, even if it has no physical parameters of force or excess body weight.

The long process of search of master Uyeshiba, it made the development of techniques to contain two major periods:

1. the period until 1946

2. the period after 1950 (*Saito, Morihiro, September, 1973).*

After the death of master Ueshiba aikido was divided. Only two masters have forwarded what wanted really great Morihei Ueshiba: sensei *Morihiro Saito* (1928-2002) and sensei *Gozo Shioda* (1915-1994). Although each had separate schools with separate names, however, they have both approached pragmatically and common Uyeshiba aikido. (*Pranin, Stanley (Fall-Winter 1966) – Morihiro Saito Celebrates 50 Years in Aikido. Aikido Journal 109*) Ueshiba's son, *Kisshomaru Ueshiba* (1921-1999) preferred a commercial approach, focused on philosophy (*Ueshiba, Kisshomarul (1987) - The Spirit of Aikido (1987), Kodansha International*).

Gozo Shioda becomes student of the master Ueshiba in 1932, when he the *Uchi-deshi* enroll (*internal student*). In a very short time wins the sympathy and respect of all his colleagues, through special qualities that he has (*Shioda, G., 2002*).

In 1955 Shioda opened his own school "*Yoshinkan aikido*" that emphasizes self-defense elements on concrete situations of struggle, and less on Shinto philosophy which we find highly developed in aikido of Ueshiba (*Shioda, G., 1968*). Besides the 150 fighting techniques, physical training include: consolidation of speed, endurance, strength, skill, and especially of balance and coordination (*Shioda, G., 2002*).

As the, *Yoshinkan Aikido*, ensures in parallel, technical training and physical training, a harmonized approach very much appreciated by those who practice it, we considered useful our intervention to showcase some resources of athletics which are selected for speed development of practitioners of this martial art. These data and means were selected from a group training program to Yoshinkan Aikido practitioners in Cluj-Napoca, and the program implemented in the private school "Happy Kids" today "Transylvania College, Cambridge International School Cluj".

Materials and methods

Materials: elastic cords; mattresses; stopwatch; Kimono.
Methods: verification; observations.

Methods of physical training. Improving speed

Speed - it is one of the particularly biometrice qualities very important in most sports, but also in practice aikido. To improve it to take account of the fact that it is genetically determined, and its improvement is quite low and it can be increased not more than 20%.

1. The alternative method

1.1. *Sprint* - 2-3 seconds, then continued running of inertia.
- No. series: 5 series.
- Cumulative distance traveled: up to 200 m.

1.2. Sprint distance of 20-40 m. Of inertia continued to run 20-30 m.
- No. series 3-4.
- Cumulative distance traveled: up to 200 m.
- The duration of the pause between sets: 3-8 minutes (the rest are working in pause between sets: 3-8 minutes (the rest are working on the fund of resting. Otherwise we don't develope the speed, but resistance).

2. Handicap Method

2.1. Running after partner – 2 pairs. One of the team sprint, after a few meters, the other starts and should catch up.
- No. series - 3-4.
- Distance - 50-60 m.
- The duration of the pause between sets - 5-10 minutes.

2.2. Start with elastic cords
Ropes link on his shoulder and starts running in different positions: start block, feet, etc.
- No. series - 3-4.
- Distance - 4-5 m.
- The duration of the pause between sets - 3-5 minutes.

3. Repeat Method

3.1. Sprints over distances of 30, 50, 100 m near the maximum speed (80%).
- No. series - 3-4.

4. Speed of reaction

4.1. Star to audio signal - running distance 20 m.
4.2. Easy running, audio signal. - running speed 20 m.
4.3. Playing ankles - audio signal - running 30-40 m.
4.5. The star block - beep, running speed 30-40 m.

4.6. Tandoku-renshu (repetition of aikido techniques without a partner), audio signal, running 20 m.

4.7. Jogging – audio signal, return and speed running in the opposite direction until another audio signal.

4.8. From face to face – Sumo (reciprocal resisting pushes) – audio signal, running speed.

5. Speed of execution

5.1. Face to face – entries of the preferred technique (Tokui-waza) – audio signal, changing pairs the nearest.

5.2. Entries with back to the partner to simulate throwing *Koshi Nage* – audio signal, change, the nearest partner, and execute the technique *Irimi-nage*.

5.3. Pulling the rope elastic and sound signal sprint 3.6 sec.

5.4. Support on the wall, playing ankles, audio signal, and sprint back 5-10 sec.

5.5. Running with knee to the chest, audio signal*, tandoku renshu* 10 sec., audio signal, running with knees to chest.

5.7. Toku-waza (the preferred technique) - 5-10 sec., audio signal, 10 m sprint, audio signal, Tokui-waza.

5.8. Sprint, audio signal 10-20 m, 10-20 m running back, audio signal sprint forward.

6. Travel speed

6.1. Running speed 20 m;

6.2. Uchi-Komi - threes, one in the middle, a technique preferred (Tokui-waza), running from one to the other,

6.3. Tai Sabaki (turns, pivot) on different directions of travel;

6.4. Pushups (4-5), and sound signal input to a preferred technique;

6.5. Butsukari geiko (movement exercises) - execution of the preferred technique or imposed, on the forward or back, in the shortest time.

7. Applicative Games

7.1. In couples, tracking partner to attain it, then the role is reversed, 4-6 times.

Results

Test 1 - *The initial evaluation stage*

1. Group target

Table athletes running 10x5 test samples and test "Beep"

Table no. 1. Athletes control group test in samples running (10x5m) and "Beep" Test

Name and Surname	Date of birth	The height	Weight	10 x 5m "Transfer" Test	"*Bip*" Test
H. D.	2.03. 2004	129 cm	27,51 kg	20 sec.	1,3"
R.M.	5.12. 2003	130 cm	27,10 kg	32 sec	1,7"
B.V	23.04.2003	140 cm	32 kg	31 sec.	2,0"
B. M.	12.10.2004	132 cm	42 kg	32 sec	2,21"
C.A.	2.06. 2003	142 cm	31 kg	41 sec	3,0"
P.A.	8.11.2003	129,6 cm	36 Kg	27 sec	3,1"
M. R.	16.12.2004	131 cm	39 kg	21 sec	2,0"
H. D.	2.03. 2004	129 cm	27,51 kg	18 sec.	2,9"
R.M.	5.12. 2003	130 cm	27,10 kg	29 sec	3,6"
D. D.	2.11.2004	128 cm	40 kg	20 sec.	1,3"

Graphical representation

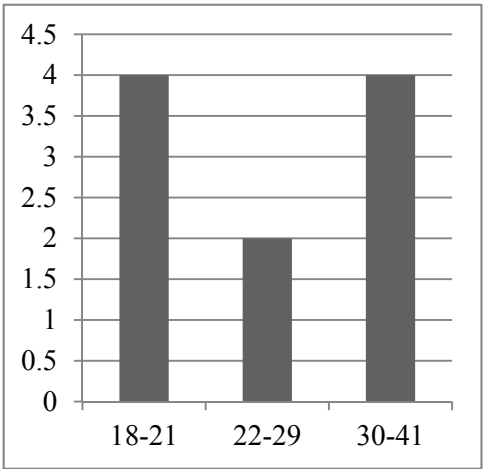

Fig. 1. "Transfer" Test

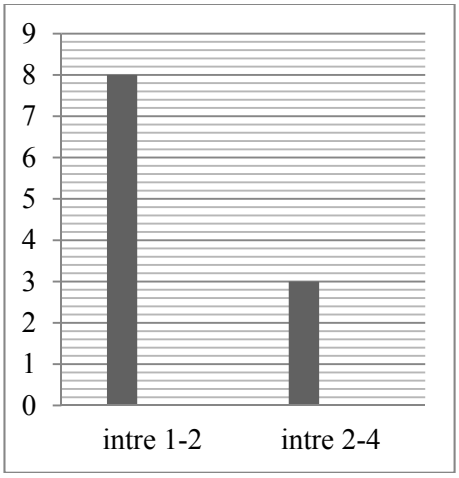

Fig. 2. "Beep" Test

The interpretation database of *target group*

Whereas group that we study, we consider it the target group, we see that after testing of "transfer test", we have the following data: Four subjects received values ranging 18 to 21 seconds, and the other four received values between 30 and 41 seconds. The rest, the two subjects, obtained values between 22 and 20 seconds.

At the "beep test" eight subjects have values ranging from one to two seconds and two others from two to four seconds.

The standard values are shown in Figure 3.

	Males (seconds)	**Females (seconds)**
Excellent	< 9.5	< 10.5
Good	9.5 to 10.5	10.5 to 11.5
Average	10.5 to 11.5	11.5 to 12.5
Poor	> 11.5	> 12.5

Fig. 3 (standard values)

Test 1. ***Group control***

Table no. 2. The athletes control group tested in samples running (10x5m) and "Beep Test"

Name and Surname	**Date of birth**	**The height**	**Weight**	**10 x 5m "Transfer" Test**	**"*Bip*" Test**
C.C.	19.09.2003	150 cm	50 kg	20 sec	1,9"
H.M.	29.08.2003	147 cm	47 kg	32 sec.	2,8"
A.M.	09.12.2004	151 cm	52 kg	32 sec	2,28"
C. D.	10.11.2003	139 cm	49 kg	40 sec	3,12"
C.A.	31.03.2004	138 cm	46 kg	28 sec	3,19"
S.K.	1.09.2004	132 cm	45 kg	24 sec	2,34"
C.M.	4.10.2004	128 cm	43 kg	28 sec.	2,54"
M.C.	30.10.2004	145 cm	59 kg	28 sec	3,56"
A.I.	31.03.2003	156 cm	56 kg	24 sec	2,98"
B.L.	31.01.2004	144 cm	46 kg	32 sec	3,43"

Graphical representation

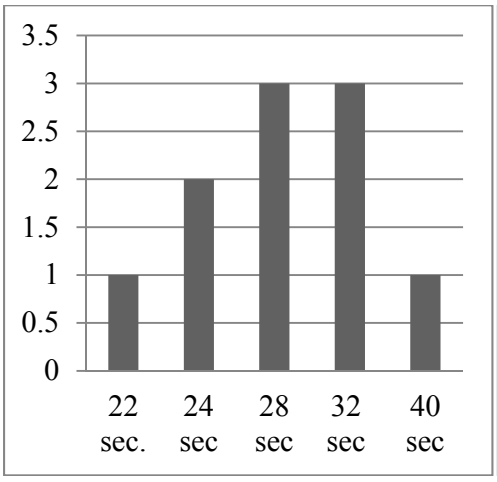

Fig. 4. The "Transfer" test - the control group

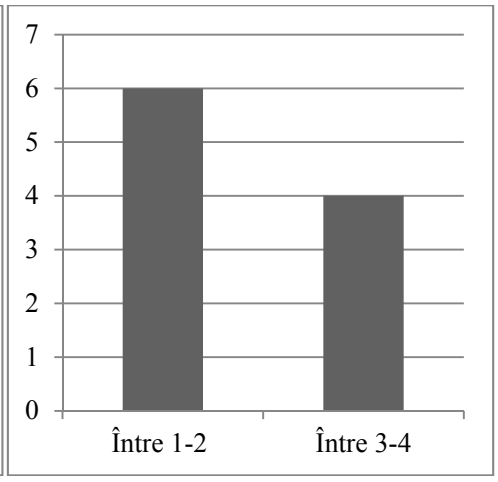

Fig. 5. The "Beep" test - the control group

Database interpretation of *the group control*

The „Transfer" test

Here the results are not so close that the *test group*. At the "Transfer" test we have six subjects who have obtained values between 28 seconds and 32 seconds (three with 3:28 and three with 32 seconds). These values represent 60% of the test subjects. One subject received values between 22 seconds and another obtained values of 40 seconds. The value of 24 seconds was obtained from two subjects.

At the "Beep Test" (fig. 4) values were between one second and two seconds, for a number of 6 subjects, while the four subjects, higher values of 3 to 4 seconds.

According to illustrated below, fig. 5 that reflect standard values, we can say that the first evaluation results are poor, each of the participants tested, each of the participants tested, achieved higher values than 11 seconds.

Test 2. ***The Final Evaluation stage***

2. Final evaluation - Target group

Table no 3. The athletes control group tested in samples running (10x5m) and "Beep Test"

Name and Surname	Date of birth	The height	Weight	10 x 5m "Transfer" Test	"*Bip*" Test
H. D.	2.03. 2004	129 cm	27,51 kg	19 sec.	1,3''
R.M.	5.12. 2003	130 cm	27,10 kg	22 sec	1,7''
B.V	23.04.2003	140 cm	32 kg	30 sec.	2,0''
B. M.	12.10.2004	132 cm	42 kg	29 sec	2,21''
C.A.	2.06. 2003	142 cm	31 kg	40 sec	3,0''
P.A.	8.11.2003	129,6 cm	36 Kg	24 sec	3,1''
M. R.	16.12.2004	131 cm	39 kg	19 sec	2,0''
H. D.	2.03. 2004	129 cm	27,51 kg	18 sec.	2,9''
R.M.	5.12. 2003	130 cm	27,10 kg	26 sec	3,6''
D. D.	2.11.2004	128 cm	40 kg	19 sec.	1,3''

Graphical representation - target group

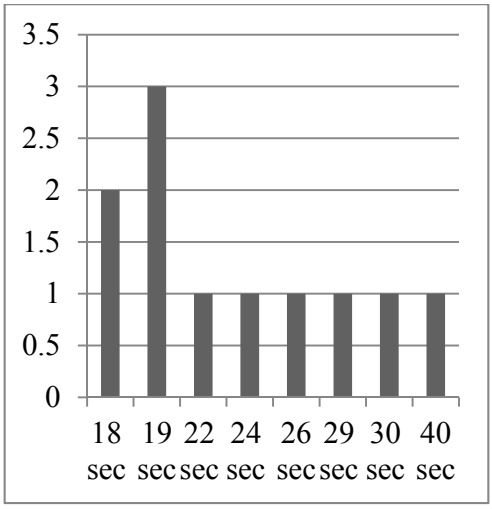

Fig. 6. The "Transfer" test - control group

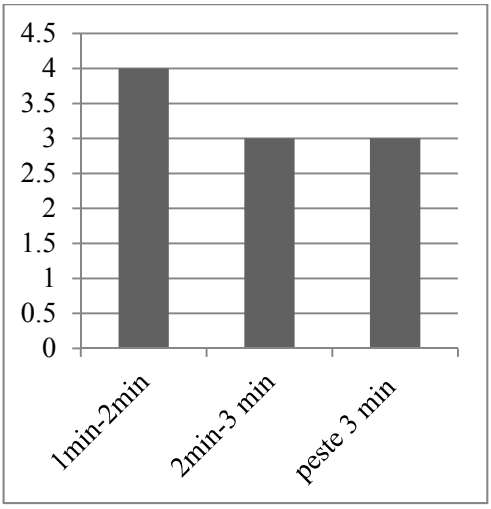

Fig. 7. The "Beep" test - control group

The interpretation of the data "Transfer" test

At the second test, after applying speed drills, we noticed an improvement significance of values. Four subjects achieved values less than 20 seconds, respectively 18 and 19 seconds. And the six subjects received a value between 22 seconds and 40 seconds.

If we compare with the initial test we shows the following:

1. We improved speed by one second for 3 subjects;
2. With two seconds better for two subjects;
3. With three seconds for three subjects;
4. A single subject an increase in speed by 10 seconds, which makes us believe a genetic propensity;
5. We have one subject that has stalled. He got the same value for the initial test.

There is no standard test for this age. The rating is for the older standard, according to the table below.

rating	men	women
very good	< 4.80	< 5.30
good	4.80 - 5.09	5.30 - 5.59
average	5.10 - 5.29	5.60 - 5.89
fair	5.30 - 5.60	5.90 - 6.20
poor	> 5.60	> 6.20

Interpretation of "Beep" test - *target group*

Four students obtained values ranging between one and two minutes, compared with eight at the first assessment. Six subjects were obtained values ranging from two minutes to three minutes. This demonstrates that this kind of exercises are beneficial, although it must be taken into consideration that in the training were used also the techniques from aikido. At this kind of testing, increasing the speed and can be conditioned by these technical elements.

Test 2. *The Control Group*

Table no 4. The athletes the control group tested in samples running (10x5m) and "Beep Test"

Name and Surname	Date of birth	The height	Weight	10 x 5m "Transfer" Test	"*Bip*" Test
C.C.	19.09.2003	150 cm	50 kg	21 sec	1,8''
H.M.	29.08.2003	147 cm	47 kg	32 sec.	2,8''
A.M.	09.12.2004	151 cm	52 kg	33 sec	2,30''
C. D.	10.11.2003	139 cm	49 kg	40 sec	3,11''
C.A.	31.03.2004	138 cm	46 kg	29 sec	3,18''
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M.C.	30.10.2004	145 cm	59 kg	27 sec	3,56''
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B.L.	31.01.2004	144 cm	46 kg	33 sec	3,40''

Graphical representation

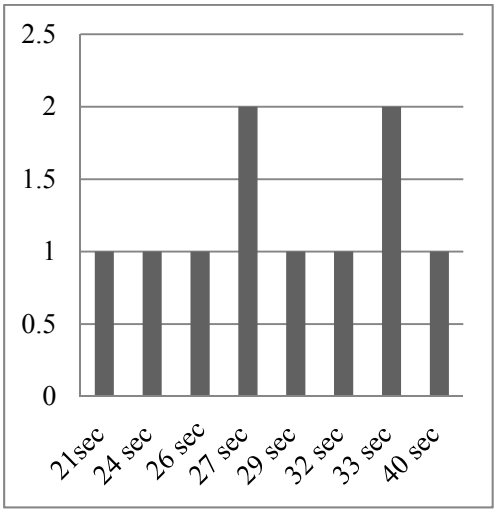

Fig. 8. "Transfer" test. The control group

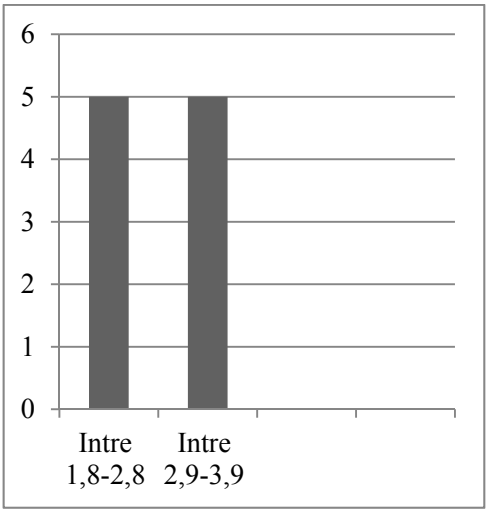

Fig. 9. "Beep" test. The control group

Interpretation of the final test – *the group test*

„Transfer" Test

Also here we have an improvement in the speed, but not so significant as to the target group. They did not perform specific exercises athletics speed, and they resumed training only basic aikido techniques.

We have the following comparative values:

1. Six subjects received an improvement in the speed of by one second;
2. One subject achieved an improvement in the speed with two seconds;
3. Three subjects achieved a speed stagnation, with the same values as the initial testing, 24, 32 and 40 seconds.

The „Beep" Test

Here we have difference of level of hundredths of seconds, compared to the initial test.

1. Six subjects improved by a hundredth of a second earlier values;
2. A subject with two-hundredths;
3. A subject with three hundredths
4. Two subjects have stalled, achieving the same (2.8 sec).

Discussions

Research in this branch didn't made in Romania and we have no information as elsewhere in the world about this kind of research. In this situation, our research is the first time, with no other benchmarks for comparison, we cannot detach than summary conclusions.

A positive factor is the improvement, not only the rate of displacement, but also but the execution speed and strength, and this can be noticed in the art of the quality and the ease with which subjects who participated in the research, could learn the techniques compared to those who were not under investigation.

Conclusion

They are evident improvements in the two tests target group components.

By diversifying the instrumentalities used in the training program, the target group children recorded an a higher frequency training.

Training in aikido involves a repetition, agreement with other partner of some self-defense techniques. The application of these techniques cannot take place effectively, than if there is an exceptional physical and mental preparation.

Current Aikido removed these forms of physical training and gave special importance to art, producing a rupture in the preparation of martial arts.

The Yoshinkan Aikido Schools and Takemutsu Aikido School retained unaltered physical training, which is done in parallel with the technical. Starting from this aspect, the preservation of traditional forms, but from the perspective of teaching physical education and sports science, it has proposed a series of physical training techniques learned in athletics. These techniques may be available to any coach willing to make significant improvements in training aikido art.

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(RECOMMENDED CITATION)

MEASURES TO PREVENT INJURIES IN THE PERFORMANCE RUGBY

POP SERGIU[1]*, CHIHAIA OCTAVIAN[1]

ABSTRACT. The paper contains information about accident prevention in rugby, and describe these methods so as to be useful for those who want to combat injuries. Injuries are described in order to give information about how these injuries manifest according to their severity and frequency. This paper contains information regarding the common injuries in the rugby game, and methods of preventing injuries in this contact game. Injuries are presented in order of their severity and frequency and the prevention methods are presented in the order that are used as planned and their way of use.

Keywords: *injury, prevention methods, performance sport, rugby, fractures, sprains, strains, dislocation.*

REZUMAT. ***Măsuri de prevenire a accidentărilor în rugby-ul de performanță.*** Lucrarea conţine informaţii despre prevenirea accidentelor în jocul de rugby şi descrie aceste metode astfel încât să fie folositoare pentru cei ce doresc să combată accidentările. Accidentările sunt descrise pentru a putea oferii informaţii despre cum se manifestă accidentările în funcţie de gravitatea şi frecvenţa lor. Această lucrare conţine informaţii privind accidentările frecvente din jocul de rugby precum şi metode de prevenire a accidentărilor din acest joc de contact. Accidentările sunt prezentate în ordinea frecvenţei şi gravităţii lor, iar metodele de prevenire sunt prezentate în ordinea în care se folosesc conform planificărilor şi modului de folosire.

Cuvinte cheie: *accidentări, metode de prevenire, sport de performanță, rugby, fracturi, entorse, întinderi, luxaţii.*

[1] *Faculty of Physical Education and Sport, "Babeş-Bolyai" University, Cluj-Napoca, Romania*
* *Corresponding author: sergiu.pop@ubbcluj.ro*

Introduction

Rugby is a team sport, of combat, of total commitment, being allowed the direct contact with the opponent, with rich motor content, part of those mixed sport games categories, which are played with both hand and foot.

An essential feature of the current rugby game is the total physical commitment, the games bear a strong imprint of the contact battle, held on individual and collective confrontation, between attack and defense, physical training being essential. It is carried a bluntly physical fight until the natural resource depletion of the opponents, which implicitly leads to less serious or serious accidents.

Contrary to expectations, rugby is situated at the number of cases of injury behind football and handball, according to a ranking compiled by specialists.

Table 1. Ranking injury in sport

SPORT	Number of cases	15-24years %
Football	420,581	39,5
Soccer	229,088	37,8
Volleyball	150,845	36,9
Rugby	130,567	36,8
Ice Hockey	116,871	20,4
Gymnastics	36,001	17,6
Judo	23,065	17,2
Box	19,675	16,6
Wrestling	13,633	13,4

(Sourse: National Safety Council, 2014 - Injury facts, edition. Itasca, IL)

The most common accidents and injuries in the training and competitions of Rugby are: sprains, dislocations, meniscal injuries, bruises, wounds, bleedings, tearing of muscle fibers, fractures, cerebral concussions.

Sprains are articular injuries that occur through forced movements, which are unexpected, surpassing limited joint mobility, or directed toward abnormal movement direction. It is an exaggerated stretch of the ligaments, sometimes with the rupture of these. These injuries are caused by tough contacts with the opponent during direct battles with the opponent, because of falling, fighting in the scrum and spontaneous, violent plywood.

The most common sprains are: ankle sprains, knee sprains, joints of spine sprains, finger sprains, wrist sprains, sprains of the shoulder, elbow sprains.

Sprains are dislocations of the extremities of the joints under the influence of mechanical forces, which by the displacement of the bone, stretch or tear of the contention tissues of the joint.

In rugby game the most frequent dislocations are at the level of: spine, leg (femoral head, ankle joint, patellar luxation, the knee joint), upper limb sprains (clavicle, humerus, elbow, hand and fingers).

Meniscal injuries of the knee

The meniscuses are fibro-cartilaginous formations, of semilunar shape, located in pairs inside the knee joint as a wedge between the tibia plateau and femoral condyles. These are connected by strong fibrous connections to bones, joint capsule and ligaments. They are pretty common in rugby, because of knee twist in direct battles with the opponent during the game. The main lesions of the meniscus are:

- loosening, breakage, the wrench of the links from joint elements;
- the sprains of meniscus are serious injuries with the locking of the knee, the periarticular muscles enter into contracture, the joint swells and it produces a sustainable slight hidrosteoarthritis.

Bruises, wounds, contusions and bleeding may occur in the rugby game, following harsh contact during the game, because of the field, because incorrect behavior of athletes (students), unjustified roughness and brutality, breach of discipline, and because of their possible overestimation, due to an insufficient educational work with them.

Contusions are lesions of the soft tissues of the body, caused by violent blows or kicks, which fail to produce a discontinuity of the tegument (skin, mucous) common in the rugby game.

The most common fractures in Rugby are at the level of the clavicle, forearm, shoulder blade, arm fractures, ulna or both, hip fractures, femur fractures, leg fractures, broken ribs, spine fractures, fractures of the tarsus.

Spine fractures occur mainly at the level of cervical spine due to an incorrect binding at the level of forefront in bulk. The rule of the game has changed in this aspect, introducing three times and decreasing the distance binding contact. The fractures of the spine are also common at beginners and properly unprepared players for these posts.

In these cases the victim is immobilized on a stretcher using the collar, and handled by doctors.

Tears of muscle fibers, muscle contractures, muscle cramps, tendon injuries are also accidents in the game of rugby injuries after hard physical contacts and great effort of the players, as well as an insufficient general and special physical training depending on the periodization of the training.

Concussions are very serious injuries that require specialized interventions. Returning to play in the rugby game being certified by neurologist specialized doctor and sports physician specialist.

Measures to prevent accidents through specific exercises for flexibility and applies an appropriate and comprehensive stretching program to reduce the risk of injuries. It is believed that poor flexibility can contribute to the appearance of lesions, but was not yet defined an optimum flexibility in the rugby game. Any lack of flexibility should be pursued as well the asymmetries, since they can increase the risk of musculoskeletal injuries and relapses.

Strength training is vital in the game of rugby being an essential quality in this protector purpose: a stronger muscle is able to absorb weight and tension force before succumbing muscle or musculo-tendinous junctions. Any shortage of muscle force, asymmetry or imbalance can cause musculoskeletal injuries such as pain and lesions of the patelo-femoral, subsequent to decline fibers of the oblique vastus medialis and pain and dysfunction of the shoulder in the case of decreasing of the force the head stabilizers.

As in other sports as well in rugby are important protective effects of aerobic exercise on cardiovascular functions, as their value for improving maximal oxygen consumption.

Other factors that prevent accidents in rugby are the analyses of kinetic chain function, proprioception, and high level sport-specific skills, hygiene and sports nutrition.

Also it is very important to follow the planning and periodization of the training.

The planning process is a way to proceed methodically, scientifically and is used to help athletes to reach high levels of training and performance. Is the most important instrument available for the rugby coach for conducting a well-organized training program on the annual calendar period, pre-competitive period (training) competitive period, transition period.

A planned and organized training program eliminates the hazard and the approach with lacks of objectives.

The intensity of the exercise will gradually decrease and finally will be made mobility movements (stretching). Also, these exercises will cause that the increased heart rate during the exercise to gradually return to normal. Returning is a very important process that should last as long as the warming: at least 15 minutes.

Important factors in accident prevention in training and competitions in the rugby game, rebuilding and recovery after effort in the game due to a special request of the effort, the heating and stretching are important factors in preventing

accidents, and also the importance of compliance of the planning and periodization of the training in order to prevent considering the program drawn up by RRF, both internally and internationally and of the team goals.

Another important factor in preventing accidents in rugby are heating and stretching. Important in rugby is the overall warming that addresses to the major muscle groups, in which the functional possibilities of the body should be brought to a higher level and the specific heat as well, which properly perform specific muscle groups at the levels of the departments namely: forwards the backs.

Stretching is performed after a preliminary heating of the entire musculature (through aerobic exercises or jogging). This gradually increases muscle tone, lengthens and strengthens muscle fibers and peri-articular tissues (tendons).

Stretching exercises performed after a proper method have more effect on the body than simply improving flexibility. These increases physical and mental relaxation ability, reduce the risk of injury to joints, muscles and tendons, reduce tension and muscle pain after exercise, improves mobility by stimulating the production of synovial fluid (joints) and the elements that enter in the composition of connective tissue;

Restoration involves not only rest (active, passive, the variant of the rest periods between exercises between workouts, between competitions) but also the variation of the effort in the diurnal, weekly, monthly, yearly, cycle.

Scientific support of the role of specific exercises in preventing specific injuries is still insufficient. However, recovery in the preventive medicine has found enthusiastic application in the American sports medicine practiced by doctors (specialists in physical medicine and rehabilitation) profiled by specialization.

Also of great importance in preventing accidents in rugby is proper nutrition and hygiene of the equipment and of the bases of activity of their work.

In the rugby activity, rational nutrition is one of the factors contributing to performance. Its failure often compromise the results of the game.

Related to the hygiene of the rugby's equipment, it should contain binding, boots, leggings, shorts, shirt, and optional equipment according to previous injuries and relapses may include: helmet made of textile and sponge, shoulders and chest shield, made of textile and sponge, metal free knee protectors, ankle protectors, armbands for the protecting of ears, silicone made dentures.

Conclusions

Curious rugby lags behind football, soccer, volleyball, due permissive regulation and incentive. Rugby is spectacular and effective, the contacts are tough but everything is within regulation.

Most frequently accidents and injuries in rugby are: ankle sprains, knee sprains, sprains spinal joints, sprains finger, fist sprains, shoulder sprains, elbow sprains, they are due to contacts tough opponent, fighting in scrums and spontaneous violent edges and plywood.

Fractures of the clavicle are as frequently like, forearm, shoulder, leg fractures, and fractures of the cervical spine are rarely occurring during incorrect binding in scrums at the line I.

As accident prevention measures need special physical training adequate force development concomitant with the flexibility specific muscle groups.

Other factors that prevent accidents in rugby are: compliance process planning and periodization of training, stretching exercises use both the end and the end of training warming.

Recovery and to make asset recovery, proper intervals of rest between exercises and competitions exercise program, a healthy diet and proper medication.

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LAJOS VERMES, THE FIRST UNIVERSITY FENCING MASTER IN CLUJ

KILYÉNI ANDRÁS[1]

ABSTRACT. Lajos Vermes is the most interesting figure of the Hungarian sport life: he was a renowned sportsman, a sport agitator, organizer and leader, teacher and beside these, he was a fibster, a person who lost his credibility quite often. Even though he devoted his life and fortune to sports he lives in the public consciousness due to his trespassing, famous bluffs and delusions of grandeur. Despite this, he had an important role in the sport life of Cluj. Without him, the local sport life wouldn't have had such a spectacular development at the beginning of the 20th century. His name is in tight relation with the development of the sport life in Cluj, the introduction of football, the success of athletics and fencing. He was one of the organizers of every sport competition in the city.

Keywords: *Lajos Vermes, fencing master, University of Cluj*

REZUMAT. ***Lajos Vermes, primul profesor de scrimă al universităţii din Cluj.*** Lajos Vermes este o persoană interesantă a istoriei sportive maghiare: a fost un sportiv renumit, organizator de competiţii sportive, profesor de sport. Dar în acelaşi timp de multe ori şi-a pierdut credibilitatea datorită unor competiţii trucate şi minciuni publicate în presa vremii. Însă în pofida acestor întâmplări Vermes a rămas în istoria sportivă clujeană datorită influenţei asupra dezvoltării mişcărilor sportive de la începutul secolului 20. Fotbal, atletism, scrimă – apariţia, respectiv succesul acestor ramuri sportive au la bază activitatea lui Vermes.

Cuvinte cheie: *Lajos Vermes, profesor de scrimă, Universitate, Cluj*

[1] *Corresponding Author: kilyeniandras@yahoo.com*

Vermes' short biography

Vermes' life was defined by this duality: every good action was followed by a slip-up. He honestly believed that he may do anything for the revival of sport life. He financed the building of a sport course and an "olympic village", but he also donated money for the building of railway between Subotica (Szabadka) and Palić (Palics), so a bigger number of sportsmen could come to the "Olympics" organized by him. These competitions were considered the local pre- events of the Olympics.

Graph 1. Vermes Lajos

It would be difficult to write the biography of Vermes, as it would rely on doubtable information. We know that he was born on 27 June 1860 in Subotica. He got his high school degree from a private school in Budapest, and later –as the records show- he worked as a medical externe. According to a story from that time Vermes finished the medical University in Budapest, the Faculty of Arts in Vienna, the physical trainer and firefighter courses in Budapest. He also visited several trading academies in Germany. This biographical information have been provided by Vermes, and the confiding journalists did not bother the check it before publication. Today it is a mystery whether Vermes finished his medical training –probably not- but he used the DR abbreviation before his name regularly and officially. Regarding his artistic and trading education we can feel free to doubt.

Vermes started his sporting career at the National Athletic Club under the guidance of Mauerer János. He won for the first time in December 1877 in gymnastics. After this, a series of great result followed: he became a renowned gymnast and athlete in the whole country, which was seconded by his remarkable cycling results. Free program, rope exercises, running, gymnastics, boxing, pole jump- he had a lot of first places through his career. In 1881 he finished second on the Budapest –Gödöllő bicycle race, in 1882 he was first in the Budapest-Kosice race (Graph 2.).

The whole country respected and admired him, but he could not live with his success. He wanted more in sports. Once he was invited for a gymnastic show. He got on his bicycle and cycled a few hundred kilometers to the site. But before the presentation, because of a bet, he tried several impossible exercises. He fell down and ultimately he could not present his exercise. Even though, he was the first who managed the bike loop. (Killyéni 2010, 26-29)

By 1885 he had over a 100 winnings –which was a great result at that time- and was not ashamed to boast with it. Organizing sport events had a major role in his life, beside his success in sports. At the beginning of the 1880's, he believed, that every door is opened in front of him, he can organize any sport competition, and that his prestige is without boundaries. His problem was that he wanted everyone else to think the same way.

He did not contract qualified judges for the competitions organized by him. Furthermore, he did not increase the league levels, but he produced incredible results: on every competition organized by Vermes at least one remarkable result was reached. If a record was needed, then it was created. He did not bother with the correct measurement of space and time. In the following years there was not one competition without a new record. Soon, the sport events organized by him, and the records reached there were known by the participants as Vermes competitions and records.

Graph 2. Vermes on his bike

Vermes' big mistake was that he was not satisfied by these results; he published it in the popular sport paper of the time, in the Herkules. This way the whole country and later all Europe heard about the new world record. In most cases the sportsmen of the time questioned the validity of the results, and Vermes was forced to admit his mistakes. Furthermore, he felt free to give out titles like: national, European or world champion, even Hungary's or the world's most powerful man. Later he gave the Hungarian Achilles title on several occasions.

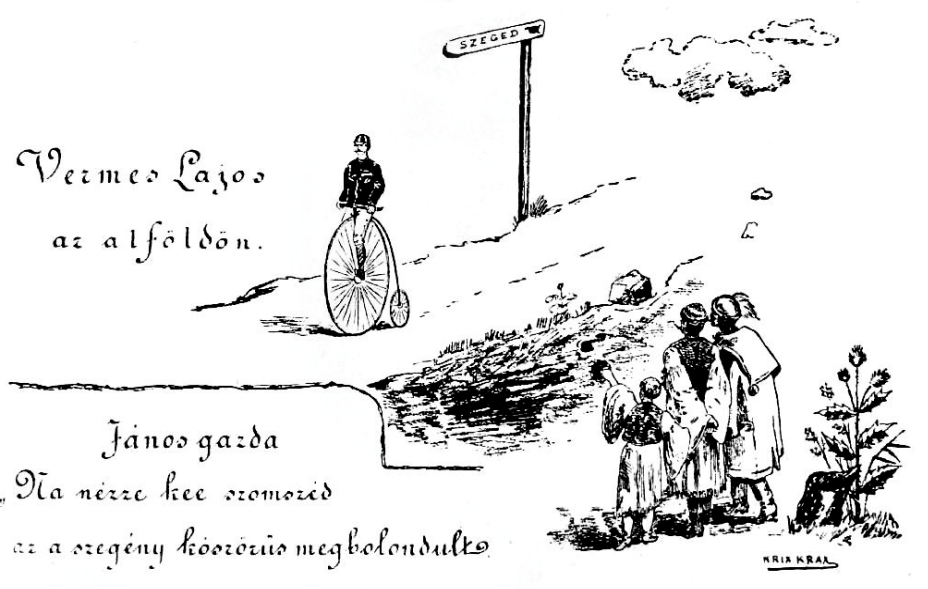
Beginning with 1880 he organized the Olympics of Palić. (Szikora 2012, 16-17.) The competition became popular, so at the beginning of the 1890's he decided to make an effort and build a modern track.

So thanks to him, in 1884 the first sport track of Hungary was built and in 1891 it was covered with asphalt. Bicycle races were organized here as well. Beside the course stood the house of Vermes, the Bagolyvár (Owl Castle). This was used by the sportsmen arriving to Palics – acting as an Olympic center. (Valihora 2008, 37-40.)

His first meeting with the sport life in Cluj was at the end of the 1880's. In 1887 Borbély György, the champion of the Athletic Club of Cluj (ACC) visited Vermes, and invited him to the Transylvanian competition. Vermes accepted, came to Transylvania and gained huge popularity on the sport events and shows. Here, the public admired the country's renowned athlete, he presented such a beautiful exercise, that we haven't seen here in Transylvania. (Siklóssy 1929, 248.) The citizens adored him, and he did not forget this.

Vermes in Cluj

At the beginning of the 1890's the sport life in Cluj was passing through crisis. There was a need for reorganizing the university's sport life, and any postponing would jeopardize the healthy development of the students. In 1895 the press from Cluj was happy to announce the arrival of Oheroly János, the delegate of the Ministry of Education and Physical Education Superintendent, sent to make up a plan to reorganize the sport life at the Ferenc József University of Science. (Ellenzék, 18th July 1895) Respecting his recommendations, in 1896 the institute invited applicants for the physical trainer and fencing master function at the university. Vermes Lajos got the job and started teaching on 4th March.



Graph 3. Vermes on his way to Cluj

The management of the university arranged a gym and fencing room respecting the wishes of Vermes. Beside this, they created a fencing committee chosen from the teachers of the four faculties. The first president of the committee was Dr. Lindner Gusztáv, the members were: Fabinyi Rudolf, Meltzl Hugó, Szabó Dénes and Udránszky László. The university embraced the teaching of fencing by giving place to a modern gymnastic and fencing institute in the new building. (Killyéni 2010, 75.) This was designed by Meixner Károly and Alpár Ignác and built by Reményik Károly. It was finished in 1902.

From 1896 the Italian fencing became more popular in Hungary, than the Hungarian version. The need for the new style was growing among the students, so beginning with 1898 Vermes Lajos organized fencing academies in Cluj, where he invited well known fencing masters to teach. Garzó Béla, who later became a physical trainer at Kecskemét, Bagaméri Béla, who became a fencing master and worked in Cluj at the beginning of the 1900's and the Sárpy brothers were some of the students who had good results on academic competitions.

Vermes was right, when he realized that for the revival of the sport life in Cluj there is need for an academic club similar to BAAC (Budapest Academic Athletic Club). For the sake of the cause, he organized in May 1901 an academic athletic competition in Cluj. As the records state "at the end of May the president (!) of the Academic Athletic and Fencing Association in Cluj (!) organized a college competition. All six athletic numbers were won by the members of BAAC in the absence of opponents. The competition was organized respecting the mentality of Vermes, in Szabadka style with total disregard of modern athletics. For shot-putting they used an 8 and a half kilogram bullet, the high jumps were executed from a board, the long jumps had a 17 meter long launching course, etc. It is not a miracle, that a vermesi record was set, Gajzágó, who returned after a long period of time as a member of BAAC won the high jump competition with a 182,5 centimeter jump." (Siklóssy 1929, 216.)

In spite of the "vermesi records" he became a dominant figure in the process of creating the sport life in Cluj, when he funded the University Athletic Club of Cluj (UACC) in 1902. This was the third academic sport club in Hungary. (Zuber 1935, 543.) Its first president was count Török Sándor.

Vermes was well respected in Cluj. The renowned confessional schools invited him to train the students in lack of specialists. The Main Catholic Gymnasium invited him to become the institute's trainer in the 1897/98 school year. This situation was eased by the fact that the building of the university and the high school were facing each other. Vermes taught here until 1903/04.

The date of the first football match held in Cluj is a mystery, but we know, that in the spring of 1896, Vermes organized a match for the sportsmen of the UACC at the military parade ground named Bivalyrét (Buffalo Meadow) situated in the suburb. He was the first to introduce and teach football in Cluj, and he had a big role in the promotion of this sport.

Beside the popular ball games of that times, football was gaining popularity. By 1898 Vemes Lajos organized 14 matches for his students in the Hója forest at the edge of the town. (Magyar Polgár, 14th June 1898)

At first the quality of the ground was not considered a problem. The students started playing freely as soon as they found a big enough space. Until the end of the 1890's and the beginning of the 1900'the Hója forest and the Bivalyrét were considered appropriate ground. These matches were defined by the incipient conditions of the field: the grass was not appropriate, the ditches and the holes were filled with rain water, the bad grass led to injuries. The gates were made of portable sticks (pop-up gauge) tied together at the top with a red ribbon. The sticks were taken to the site every time, and were taken back to the gym after every match. (Killyéni 2010, 47.) Before playing, Vermes appointed the field, grouped the students randomly in two teams and ran the match with the help of a whistle. Only the most basic rules and expectations were introduced to the students, and this was enough at that time.

The more frequent and regular matches led to close relationships and the development of team spirit, so the creation of teams was a question of time. In the autumn of 1901 several students from Debrecen came to the university in Cluj, and with the local students they formed the first football team of the city: the Academic Football Team (AFT). The duties were transferred from teacher to students parallel with the development of football and of the organizational skills. In the spring following the foundation of AFT the students were organizing regular training sessions and matches.

The other educational institutes had introduced football as well. They went on the same road from spontaneous playing to the well-organized one, which ultimately led to the foundation of selected teams. The students of the Main Catholic Gymnasium were introduced in the world of football in 1897, when Vermes Lajos became the trainer of the school. The memoirs of Dr. Kis Géza, the former student of the gymnasium confirm the reports written by Vermes in the 1897-98 year book, which states that beside other ball games, they played football as well. (based on Kiss Géza's memoirs, which are part of the sports inheritance of the Apáczai Cs. J. Association)

In the beginning the lack of balls was a serious problem, as Vermes took back his sport in the university's gym after every game. At this time, the gymnasium just like the other high schools did not have balls. From the existing memoirs we can see, that in 1897-1898 the students organized their matches excursively.

The memoirs of dr. Vuchetich Vuk attest the appearance of the new sport. The student from Zagreb arrived to Cluj in 1901, and was surprised by the novelty of this sport, as he had been playing it in the last three years. At the beginning Vermes rarely took out the ball, as at the turn of the century students were playing

handles-ball – a popular ball game. The interest of the students convinced Vermes in the spring of 1901 to introduce football. Despite the initial difficulties and confusion, football soon became popular among the students. Initially the playing was chaotic, but the students loved it. (based on Vuchetich Vuk's memoirs, which are part of the sports inheritance of the Apáczai Cs. J. Association) By 1902 the Catholic Gymnasium and the Unitarian Gymnasium had their own teams, and soon they organized friendlies.

In the early 1900's many sportsmen played a role in the popularization and development of football. Until May 1901 12 matches were organized with the participation of 300 students thanks to the contribution of Paukovich Andor, first year law student. (Magyar Polgár, 11th June 1901) Vermes continued to participate in the organization of the league matches. He was assisted by Aurel Isacu second year law student, Lassel Gyula, the teacher of the Unitarian High School and Hoffman Ferenc, the teacher at the Trading School.

Vermes revived in Cluj, he had the respect and trust of the citizens. The citizens were sport fans, so they were grateful, that the renowned sportsman moved to their city. But Vermes wanted more, than their respect.

Graph 4. The gymnastic and fencing institute (around 1905)

He started printing business cards and diplomas, and just like in the past, he used false information to emphasize his importance in the Hungarian sport life. This wasn't surprising, but Vermes committed a bigger mistake, when he gave these diplomas to be signed by the sport leaders of the city, the sponsors. They did not know about the real achievements of Vermes, but believed in him, as he was an enthusiastic sport leader. This action questioned seriously the sport credibility of Vermes.

The diploma was the product of an older wish of Vermes Lajos that of letting everyone know how he was Hungary's biggest athlete. This was the reason why he printed that diploma which proved –obviously with his false records- his best results achieved through his career. These records -10,2 seconds on 100 yards, 197 centimeters in high jumps- were world records at that time.

Vermes' other unforgivable error is related to his leadership at UACC. The past was repeating itself, as he committed the same error as in Subotica. He was convinced that the club should be ruled respecting his and his supporters' ideas. He could not accept that in some cases his opinion did not matter, that his plans were disregarded. So he went on an UACC meeting with a revolver and dispelled the participants. This could not be forgiven. (Zuber 1935, 642.)

This was his life. Due to the loss of credibility he was proscribed for a hundred year, his actions became a source of fiction. But his real sport feats overrun his scams; his course of life is reevaluated. From a hundred years distance his pioneer work as a sport agitator oppresses his excessiveness. The duty of the posterity is to guard his success and his achievements, and to tell the folly stories about him. These actions were taken in the name of sport and in the present they are a source of humor.

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THE EXPLOAITATION OF MOUNTAIN SPACE THROUGH SPORT AND LEISURE ACTIVITIES. CASE STUDIES: THE VIA MARIA THERESIA MARATHON FROM THE CĂLIMANI MOUNTAINS AND THE COLIBIȚA BIKE FEST FROM THE BISTRIȚA ARDELEANĂ GORGE AND THE COLIBIȚA DEPRESSION

BÂCA IOAN[1]*, ȘTEFĂNESCU HORIA[2], SCHUSTER EDUARD[1]

ABSTRACT. The mountain area, through its geographical characteristics, has numerous resources that can be utilized through leisure activities which contribute to the improvement of health and physical condition. Among these activities there are the mountain marathons organized in recent years in numerous locations in the Romanian Carpathians. Such a marathon is the Via Maria Theresia Marathon from the Călimani Mountains organized on a route with historical connotation set in the 18th century under the reign of Empress Maria Theresia and her son, Emperor Josef II. Likewise, there is a mountain bike competition in the Bistriţa Ardeleană Gorges which brings together many bikers from all over the country. The present study analyses the geographical conditions which contribute to the organization of these events and their impact on the human body.

Key words: *Călimani Mountains, Bistriţa Ardeleană Gorge, Colibiţa, Via Maria Theresia, mountain space, mountain marathon, mountain biking, active leisure*

REZUMAT. ***Valorificarea spaţiului montan prin activităţi sportive şi agrementale. Studii de caz: Maratonul Via Maria Theresia din Munţii Călimani şi Colibiţa Bike Fest***. Spaţiul montan, prin caracteristicile sale geografice, deţine numeroase resurse care pot fi valorificate prin activităţi agrementale active care contribuie la menţinerea sănătăţii şi la îmbunătăţirea condiţiei fizice. Dintre aceste activităţii, se remarcă în ultimii ani maratoanele montane, organizate în numeroase locaţii

[1] *Faculty of Geography, Babeş-Bolyai University, Cluj-Napoca*
[2] *Faculty of Physical Education and Sport, Babeş-Bolyai University, Cluj-Napoca, Romania*
** Corresponding author: john_grimo@yahoo.com*

din Carpații Românești. Un asemenea maraton este și Maratonul Via Maria Theresia care se desfășoară în Munții Călimani pe un traseu cu încărcătură istorică amenajat în secolul XVIII sub domnia împărătesei Maria Theresia și a fiului său, împăratul Ioasif al II-lea. De asemenea, în Cheile Bistriței Ardelene se desfășoară o competiție de mountain bike care reunește mulți bikeri din toată țara. Studiul de față analizează condițiile geografice care contribuie la organizarea acestor evenimente și impactul asupra organismului uman.

Cuvinte cheie: *Munții Călimani, Cheile Bistriței Ardelene, Colibița, Drumul Mariei Terezia, spațiu montan, maraton montan, mountain biking, agrement activ*

Introduction

The mountain area, through its geographical characteristics (landforms, climate, air and water quality, vegetation, landscape) is capable of supporting various sports and leisure activities (hiking, climbing, biking, horseback riding, canyoning, kayaking, canoeing, ski touring, alpine skiing, snowboarding, etc.) which can be relaxing, beneficial to the health, and help improve physical condition. Besides leisure activities, sport competitions such as mountain marathons and mountain biking competitions are taking place. Thus, to show the positive impact that such activities can have, the present paper had taken in two events carried out in the studied area of the Călimani Mountains in 2014: the Via Maria Theresia Marathon and the Colibița Bike Fest.

The Mountain Marathon is a sport activity that involves long-distance running in mountainous terrain, over a period of hours or days. Participants are grouped in teams of two or more persons, but there are situations where they run solo, as is the case of the class elite or experienced runners. The participants to the mountain marathons come from various social fields (pupils, students, athletes, intellectuals, workers, etc.), but all have in common a love for outdoors activities and nature. The profile of mountain runners can be sketched as follows: various occupations, strong character, determination, courage, desire and knowledge of their own limits, love for nature, fellowship, field orienteering abilities, physical condition.

The factors that govern the conduct of mountain marathons are: geomorphometric features of the land (energy, slope, orientation, and fragmentation), weather (temperature, precipitation, and wind), the characteristics of vegetation (forest, pasture), the degree of humanization of the land (forest roads, tourist and shepherd footpaths), the profile of participants (age, health status, physical condition).

Among the marathons in Romania we can list the following: Eco Marathon Moeciu, Hercules Marathon, Făget Winter Race, Brașov Half-Marathon, Brașov

Marathon, Apuseni Mountain Marathon, Retezat Trail Race, Cozia Mountain Run, Bucegi Mountain Marathon, Retezat Marathon, Ciucas Mountains Trail Running, Piatra Craiului Marathon, Voineasa Mountain Run, etc.

Organizers of such events are the clubs and tourist associations, clubs and sports associations, county and local authorities, along with numerous sponsors interested in the promotion of mountain leisure.

Methodology

For the present study, there have been completed following steps:

- Consulting the specialized bibliography concerning the areas of the Călimani Mountains (Naum, Butnaru, 1989; Bâca, Șteff, Bude, 2015), the Colibița Depression (Bâca, Șteff, 2010, 2014) and the Bârgău Mountains-Piatra Fântânele sector (Bâca, 2012);
- Completion of specialized works relating to leisure outdoor activities, and in particular the mountain marathons (Epuran, Marolicaru, 2000; Epuran, Holdevici, Tonița, 2001; Epuran, 2005; Ganea, 2006; Hoffman, 2008; Abshire, Metzler, 2010; Ferguson, Shevels, 2011; Allen, Yasso, Burfoot 2012);
- Collecting biogeographical and geomorphological data relevant to sporting and leisure aspects along the route of the Via Maria Theresia Marathon and the Colibița Bike Fest;
- Processing statistical data related to the number, type and origin of participants at the events, as well as the section for which they have opted (marathon, semimarathon, XC marathon, hiking)

(https://www.facebook.com/colibitabikefest, http://via-maria-theresia.ro/).

Results and discussions

Case study 1: The Via Maria Theresia Marathon from the Călimani Mountains

The Via Maria Theresia Marathon (fig. 1) takes place in the Calimani Mountains (with 80% of its route within the Călimani Mts. National Park) and the Bârgău Mountains, areas which, through their geographical features, can support such a sporting events (fig. 2).

The name of the marathon comes from the border road build in the time of Empress Maria Theresa (1740-1780) and Emperor Joseph II (1741-1790) along the Călimani Mts. peaks. This road started from the valleys of the Șieu and Budac

rivers along the alignment Dealul Negru - Bistricior Massif towards the border area between Transylvania and Bukovina, followed the ridge Strunior – Ciunget – Rusca – Pietrosul - Negoiu Unguresc – Pietricelul – Reţitiş - Bradu Ciont - Iezerul Călimani, from where it descend to the Drăgoiasa Valley, within the Bistriţa Aurie catchment area. Part of this road coincides with the route of the marathon, in the Negoiu Unguresc - Bistricior Massif sector.

Fig. 1. The Logo of Via Theresia Mountain Marathon
(source: *http://via-maria-theresia.ro/*)

Technical features of this marathon are the following:

- Sections: marathon, semi-marathon, XC Maraton and hiking;
- Length: 42,195 km (marathon and XC Marathon), 21, 097 km (semi-maraton, hiking);
- Level difference: 1000 m;
- Degree of difficulty: medium;
- Type of route: linear with control points in the order.

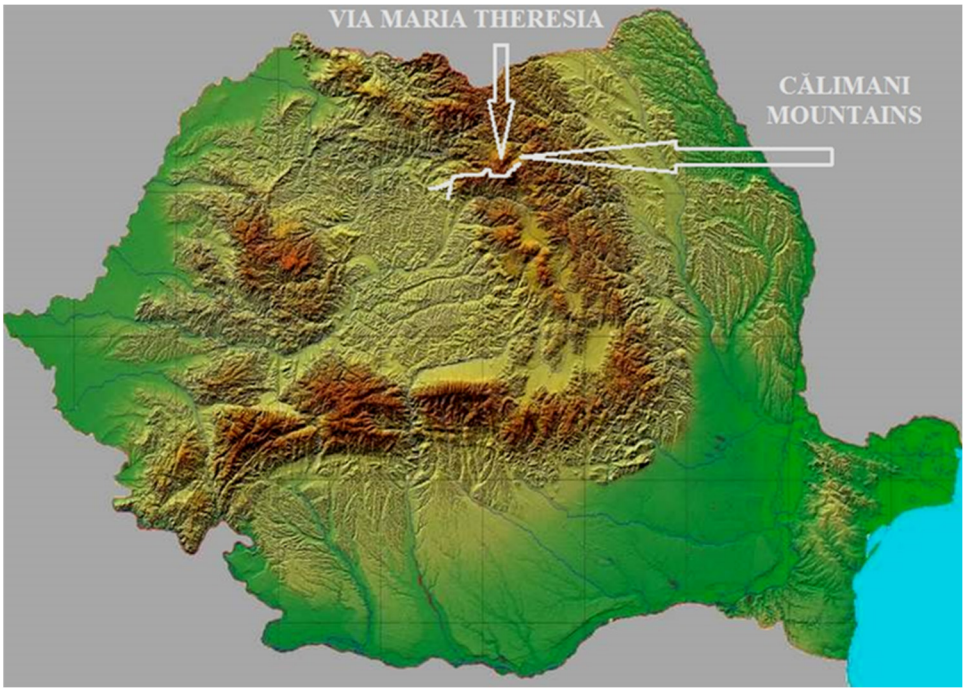

Fig. 2. Geographic localization of the Via Maria Theresia Marathon route in the Călimani Mountains

The route of the Via Maria Theresia Marathon is the following:

Start at the former Sulphur mining Negoiu Românesc (1550 m) - Nicovala Saddle (1934 m) - southern slope of Pietricelul Peak (1993 m) - Negoiu Saddle (1075 m) - Negoiul Unguresc (2081 m) - Pietrosul Peak (2100 m) - Poiana Monor - Piciorul Monor - Poiana Izvoare (1723 m) - Grui Monument of the Heroes (1800 m) - Rusca Peak (1913 m) - Ciunget Peak (1923 m) - Poiana Arsuri (1673 m) - Poiana Piciorul Ilei - Străcior Peak (1963 m) - Viișoara Peak (1810 m) - Poiana Dălbidan - Terha River springs - Poiana Terha – Terha - Buba Ridge (1670 m) - Poiana Priporul Roșu - Cornu Peak (1502) - Poiana Vinului - Șendroaia Ridge - Forest Office (1100 m-finish) (fig. 3).

The Semi-Marathon took place on the route:

Start at the former Sulphur mining Negoiu Românesc (1550 m) - Nicovala Saddle (1934 m) - southern slope of Pietricelul Peak (1993 m) - Negoiu Saddle (1075 m) - Negoiul Unguresc (2081 m) - Pietrosul Peak (2100 m) - Poiana Monor - Piciorul Monor - Poiana Izvoare (1723 m) - Grui Monument of the Heroes (1800 m) - Ruștii Peak (1913 m) - Ciunget Peak (1923 m) - Poiana Arsuri (1673 m) - Tihu Valley (finish);

The hiking took place on four options, as follows:

1) Dornișoara (1050 m) - Grui Monument (1800 m) - Dornișoara (5 km);

2) Dornișoara - Grui Monument of the Heroes - Ciunget Peak - Poiana Arsuri - Tihu Creek - Dornișoara (7 km);

3) Dornișoara - Tihu Creek - Poiana Arsuri - Poaiana Piciorul Ilei - former Strunior Mine - Dornișoara (6 km);

4) Dornișoara - former Strunior Mine - Poiana Străcior - Poiana Dălbidan - Poiana Terha - Zâgrciu Creek - Dornișoara (9 km).

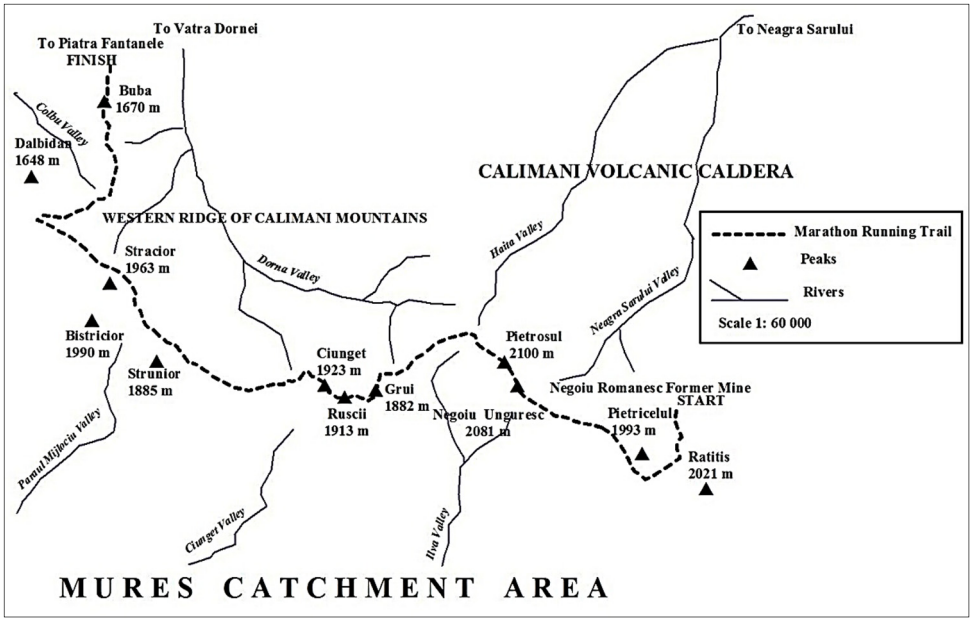

Fig. 3. The route of Via Maria Theresia Marathon

Via Maria Theresia Marathon is a marathon along a mountain ridge, its geographical features being shaped by several factors, such as: hardness of igneous rocks, landforms marked by peaks, saddles, slope or flat segments, residual slopes, boulder fields, forest vegetation (*Picea abies*, *Abies alba*, *Fagus sylvatica*), and alpine vegetation (*Pinus mugo*, *Juniperus communis*, *Vaccinium myrtillus*, *Vaccinium vitis-idaea*), the presence of sheep farms and sheep herds and characteristic high mountain weather phenomena (low temperatures, rain, fog, wind) (fig. 4).

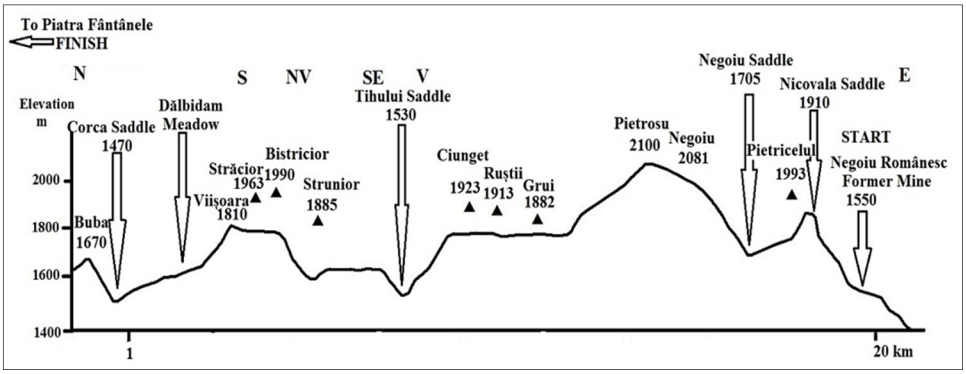

Fig. 4. Geomorphometric profile of the Via Maria Theresia Marathon (sequence)

The marathon Via Maria Theresia gathered 300 people (fig. 5), from 23 counties (fig. 6), which have opted for one of the disciplines listed above (fig. 7), which show the public's interest for such activities, but also the historical resonance of the route.

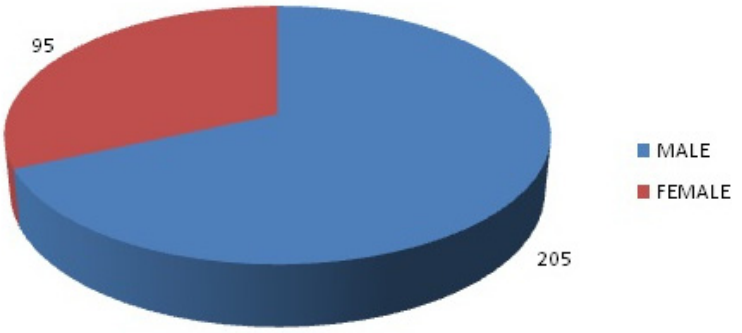

Fig. 5. The genre of participants to the Via Maria Theresia Marathon 2014 edition (source: *http://via-maria-theresia.ro/*)

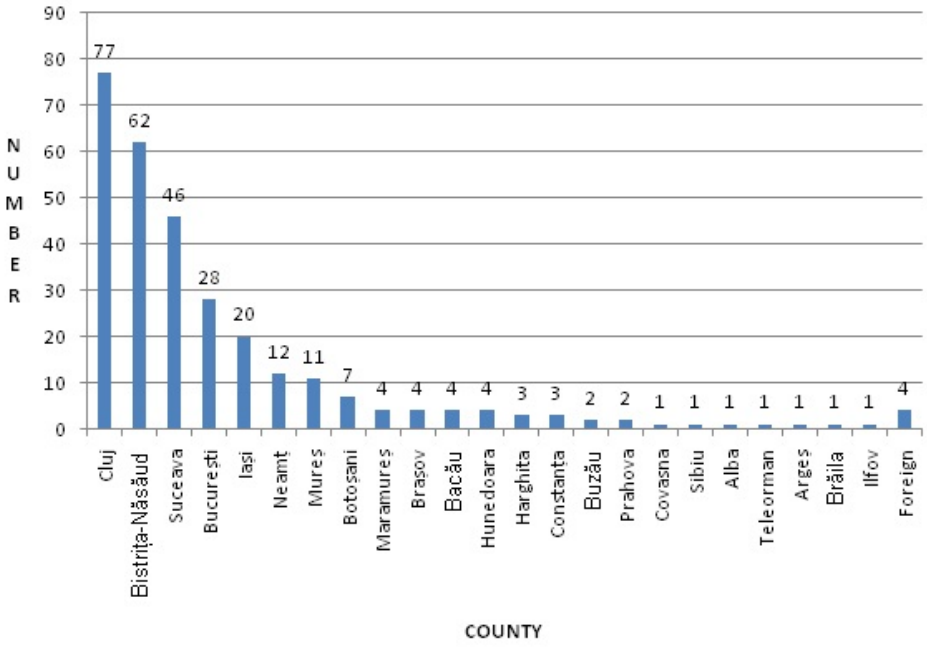

Fig. 6. The origin of participants to the Via Maria Theresia Marathon 2014 edition (source: *http://via-maria-theresia.ro/*)

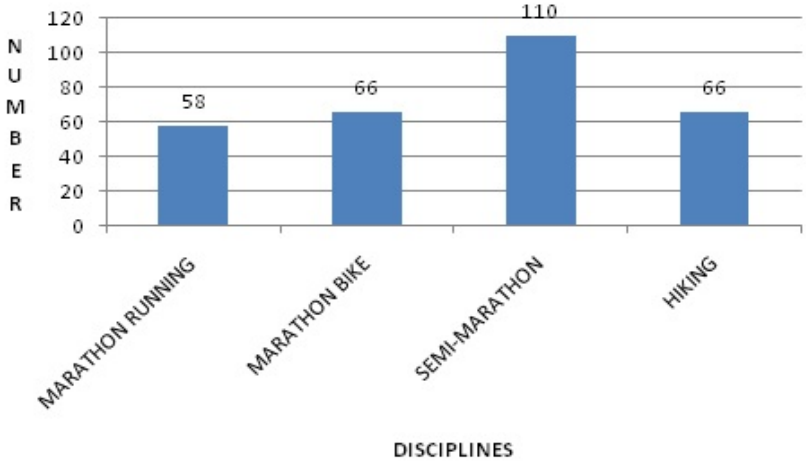

Fig. 7. The number of participants to the Via Maria Theresia Marathon 2014 edition by disciplines
(source: *http://via-maria-theresia.ro/*)

Case study 2: Colibița Bike Fest

Colibița Bike Fest is a sporting and leisure event which takes place in Poiana Stegea in the Bistrița Ardeleană Gorges (fig. 8). Each year, bikers from several counties of the country meet here (fig. 9, 10), competing in the following categories: BMX Dirt, Dirt MTB, Dual, Marathon Running, Trial, Trial Elite Masters, XC Amateurs, XC Pro (fig. 11).

Fig. 8. The geographic location of the Bistrița Ardeleană Gorge in Bistrița-Năsăud County

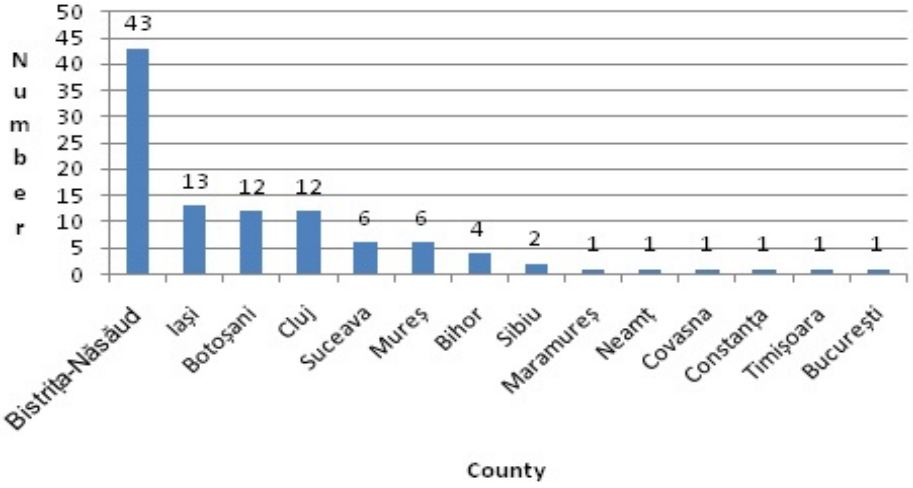

Fig. 9. The provenience of participants to the Colibița Bike Fest 2014 edition (source: *https://www.facebook.com/colibitabikefest*)

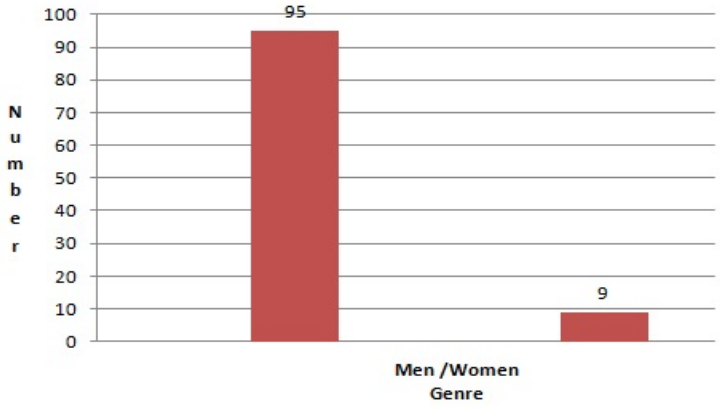

Fig. 10. The Genre of participants to the Colibița Bike Fest 2014 edition (source: *https://www.facebook.com/colibitabikefest*)

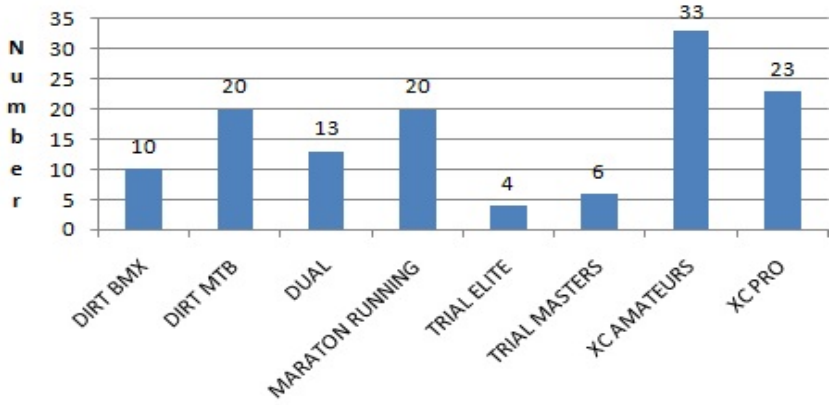

Fig. 11. The disciplines of the Colibița Bike Fest 2014 edition and the number of participants (source: *https://www.facebook.com/colibitabikefest*)

The competitions of Dirt BMX, Dirt MTB Elite, Trial, Trial and Dual Masters are held in Poiana Stegea, where there exists a proper equipment (fig. 12), while the competitions of Marathon Running, XC Amateurs and XC Pro are carried out in the Colibița Depression and the Călimani Mountains Plateau (Dealul Negru Ridge). The XC Marathon was 50 km long, with a 890 meters level difference and took place on the route Poiana Stegea - Stegea Valley - Dealul Negru (”At The Cross”) -

Poiana Cofii - Pănuleț Valley - Tirimii Valley – Țiganca - Colbu Valley - Pănuleț Valley - Poiana Slatinii - Sub Dealuri - Colibița Dam - Poiana Stegea, including areas with a variety of geomorphological parameters (forest road, shepherd routes, slopes, rocky ground terrain, valley sectors, ridge sectors, downhill sections, wooded areas) (fig. 13).

Fig. 12. Trial contest at the Colibița Bike Fest 2014 in Poiana Stegea

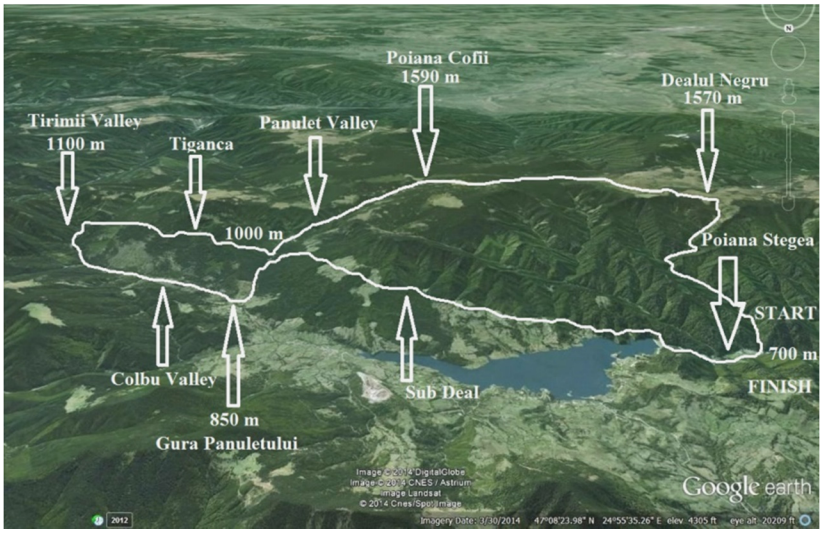

Fig. 13. The route of XC Marathon (Colibița Bike Fest 2014)

Conclusions

Via Maria Theresia Marathon and Colibiţa Bike Fest are two major sporting events held in the contact area between the Bârgău and Călimani mountains, because the natural environment of this area is favorable for active recreational activities. The sections of the competitions are diverse, and the number of participants is relatively high, which proves the public's interest in such events.

The impact of these two events is confirmed by the following:

- The growing number of bikers who are preparing for future mountain biking competitions;
- The growing number of hikers undergoing the route of the Via Maria Theresia Marathon for recreation;
- The concern of local authorities for planning of tourism locations where the two competitions are taking place;
- Increasing interest in the protection and preservation of the mountain environment in general, and in the two areas hosting the two events in particular.

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