

rise to the value of a junior III, and even a junior II, but the Romanian Athletic Federation rulebook does not allow her to participate in the competitions for these age categories.

5. Conclusions

The study has confirmed the working hypothesis, in the sense that the specific means and methods used to train the female juniors III from SSC Bacau (fall training period - 3 months) for the high jumping event can constitute a national training model and an important model in establishing the training strategies for starting out coaches.

The average values recorded by the female athletes in this study during the control challenges and during the main means used in the technical training can constitute models for the monitoring of female junior III high jumpers.

Another aspect highlighted by the study is that in order to get good results from female junior III high jumpers during competitions one needs a training period of approximately 4 years. In this case, the female athletes' general training focused on multiple events, thus it can be said that none of the subjects was specialized on one single athletic event (high jumping). The female athletes' top performances (throughout their career) were recorded after 12 years of training in the case of athlete FA, and after 8 years of training in the case of athlete PA. The other female athletes (except for AS) are still in training, thus they have not reached their top performance in their career.

Another aspect emphasized by this study was that the age at which the female athletes leave the professional athletic life has dropped together with the selection age. This aspect raises many questions regarding the selection at the age of 8, and the authors of this paper believe that this partially explains the very poor results of the senior athletes during the major competitions and the very small number of athletes at this age category.

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Study Regarding the Importance of Warm-Up According to the Specifics of the Competition, Aiming to Improve Athletic Performance

Ababei Radu^a

^a"Vasile Alecsandri" University of Bacău, Romania

Abstract

The warm-up practice has been universally accepted a long time ago. While the general principles regarding the necessity of warm-up remain valid, in the last few years there is evidence that questions the use of the traditional warm-up methods, and introduces potential areas for future development. This study aims to analyze the warm-up times mentioned in the competition rules for three sports - track and field athletics, boxing, and team handball. This study, conducted on Bacau athletes, highlights in its conclusions the necessity for "training" the warm-up, for the conservation of the athlete's energy for competition, and at the same time, creating multiple ways for

each athlete to perform the warm-up, according to the time available - normal warm-up, warm-up followed by break, and emergency warm-up.

Keywords: warm-up, sports, performance

Introduction

The procedures, the routines that compose the warm-up in various sports are treated superficially in most training methods literature for each sport, its role being understood, most times, only as a set of measures meant to avoid injuries, not as a way to achieve an optimum physical state for the competition. The warm-up times, made available by the organizers, vary from one sport to another, and from one competition to another.

Warm-up before exercise is a transition stage between rest and effort, needed in order to progressively get the body moving (joints, muscles, cardio-respiratory system, mental state). "Warm-up represents all the measures that allow the athlete to reach an optimal state of physical and mental training before training or a competition. Warm-up plays an important role in the prevention of injuries" (Jurgen Weineck, 1998).

Warm-up drills are used on a large scale by athletes in both team and individual sports. Although there is a debate within the scientific and medical circles regarding the warm-up methods and its goals, one can say that the purpose of warm-up is not to lower the risk of injury, but has much deeper benefits. These benefits include the activation of the metabolism, increasing the temperature and muscle function, optimization of the cardio-respiratory system function, as well as finalization of mental training aspects, such as concentration, attention and disposition. Warm-up allows also the practice of technical procedures to achieve a better hand-eye or leg-eye coordination, as well as an accommodation to the competition surface or apparatus.

The purpose of warm-up is short term adaptation, by getting the main physiological markers to an optimal level that would allow a following effort of great intensity. It is performed using the means of athletics or gymnastic but also specific drills, ideally the optimum level of activation being obtained through a lower energy consumption. This goal emphasizes the need to use in this part of the lesson active and passive mobilization drills, stretching, massage, yoga techniques, etc. However, the use of non-traditional means must be according to the athletes' age and instruction particularities. There are many coaches, in this author's experience, who use these means with children just because the means are in fashion, but most of them require knowledge of anatomy, biomechanics, etc., knowledge that very young athletes do not possess. They must be used gradually, once the athletes have gained the proper knowledge (Ababei, R., 2006).

It is generally believed that warm-up ends when the athletes' heart rate reaches 140 bpm, this being a threshold from which the athlete can reach values higher than 200 bpm without having to come back to values under 100 bpm, which would cause syncope or cardiovascular accidents.

Most studies (Anton 2007, Dragnea 1996, Teodorescu 2006) consider warm-up as being "all the measures serving to set up, before the effort, competition or practice, a state of optimal sensory and kinesthetic psycho-physical preparation that would prevent the possible injuries" and they divide warm-up according to its aim into

- General warm-up, which aims to bring the body to a superior functional potential through drills that produce the warm-up of large muscle masses.
- Specific warm-up, which is done through drills that produce the warm-up that prepares the body to perform specific actions.

Based on the criterion of the drills used, there can be active, passive, mental, and mixed warm-up.

2. Objectives, Materials and Methods

This study aims to analyze the warm-up times mentioned in the competition rules for three sports - track and field athletics, boxing, and team handball, and the actual time the athletes had until the event started. The study was conducted on Bacau athletes, during the competition year 2015-2016 for track and field athletics, and the 2016-2017 one for boxing and handball. The competitions to be analyzed were chosen according to how easy the access to information was (direct observation, or video recording). Participations in major competitions were analyzed, as follows:

Track and field athletics:

<i>Competition</i>	<i>Place</i>	<i>Date</i>
Finals of the National Athletics Championships, juniors I	Pitești,	30 - 31.07.2016
Finals of the National Athletics Championships, indoors, juniors I	Bucharest	27 - 28.02.2016
European Youth Olympic Festival (EYOF)	Tbilisi	22 - 27.07.2015
World Athletics Championships, juniors II	Cali	16 - 17.07.2015
Finals of the National Athletics Championships, indoors, juniors III	Bacău	07 - 08.03.2015
Finals of the National Athletics Championships, indoors, juniors I	Bucharest	26 - 27.02.2015

Boxing:

<i>Competition</i>	<i>Place</i>	<i>Date</i>
National Boxing Championship, Juniors	Tg Jiu	24.10. - 29.10.2016
National Championship Seniors	Brăila	02.10. - 16.10.2016
Romania's Cup - Youth	Bacău	17.04. - 23.04.2016
Romanian Cup, Seniors	Braila	21.03. - 27.03.2016
Romanian Cup, Seniors	Bacău	03.04. - 07.04.2017
National Championship U22	Brăila	05.02. - 19.02.2017

Handball juniors I (semifinal tournaments, Bacău and Roman, Nov-Dec., 2016):

<i>Team A</i>	<i>Team B</i>	<i>place</i>	<i>Score</i>	<i>Date</i>
Știința Municipal Bacău 2	Știința Municipal Bacău	Bacău	28:34	17.11.2016
Știința Municipal Bacău	LPS Iași	Bacău	52:21	18.11.2016
LPS Piatra Neamț	Știința Municipal Bacău	Bacău	30:46	19.11.2016
Știința Municipal Bacău	LPS Nadia Comănești Onești	Bacău	10:0	20.11.2016
LPS Suceava	Știința Municipal Bacău	Roman	34:41	02.12.2016
Știința Municipal Bacău	LPS Roman	Roman	43:27	03.12.2016
LPS Vaslui	Știința Municipal Bacău	Roman	27:49	04.12.2016

This study started from the following *hypotheses*:

1. Warm-up in sports training and during competitions is a determining factor for top performance, the success or lack of it depending on the quality of the warm-up.
2. Because of the variable and mostly unpredictable time for performing the warm-up, the coaches must find a solution during training for the athletes to get used to an “emergency warm-up” or a “warm-up followed by a break”.

Results

In athletics, the problems related to the time allocated to warm-up are the most acute during the technical events, where a specific warm-up is needed, to get used to the competition material (throwing) or the elasticity of the track (sprint, hurdles, jumping).

The IAAF rules do not specify explicitly the time to be allocated for warm-up, leaving it to the decision of the organizers. The allocated time varies according to the restrictions imposed by sponsors or TV transmissions, or call time, varying from 10 to 30 minutes that athletes can spend in the competition space. In Romania, the standard time for warm-up is 15 minutes for the track events and 20 minutes for the technical events. Reality has proven, however, that out of these minutes an important part is lost with solving the technical problems (spring, start, practice 1,2,3 hurdles, throwing, etc.), while another part is allocated to organizational problems (arrival at the place of the event, presentation of the competitors, specifying the height for entering the competition, etc.).

This study has a comparative chart regarding the time allocated by the organizers and the actual time remained that the athletes have and use to perform the specific warm-up. Figure 1 presents the differences recorded as average of the time used by the event finalists.

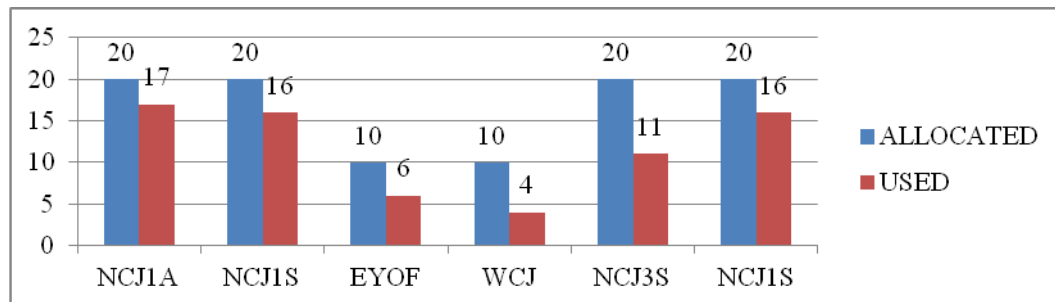


Figure 1 Useful time used in the warm-up for hurdling

The analysis of the data in figure 1 shows the following:

In the hurdling events the effectiveness of the time used for the specific warm-up varies between 40 and 70%, which shows that the useful time the athletes spent on the track is much below the level of time allocated by the organizers.

The problem becomes more complicated when dealing with international competitions, where the allocated time is generally very short (usually 10 minutes), which does not allow the athletes to get used to the track and hurdles, thus having to train specifically starting with the warm-up stadium and maintain this training at an optimal level for as long as possible.

There is also another problem that can generate perturbations in the allocation of time for warm-up - the time between series. During the Cali 2015 Junior World Championships the time difference between the first and the last series was more than an hour, which made the athletes from the last series start their warm-up when those from the first series were finishing the event. Not in the least, one must notice a dissonance between the allocated time in Romania and abroad, the Romanian athletes being used, unfortunately, to a longer time on the track.

Figure 2 presents the results for the effectiveness of the use of warm-up time on the track during the jumping events.

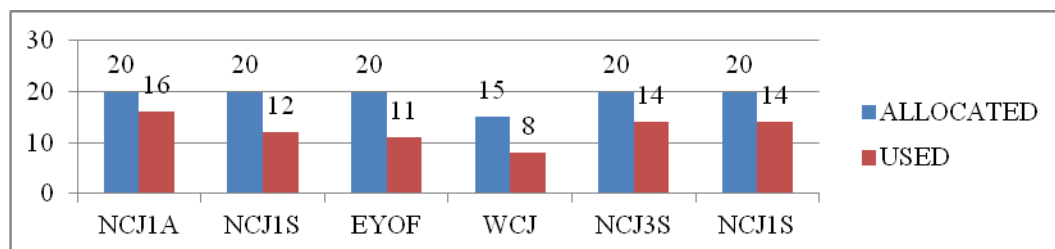


Figure 2 Useful time used in the warm-up for jumping events

In the jumping events the effectiveness of the time used for the specific warm-up varies between 40 and 85%, this being possible because the routines that the athletes have to practice on the competition track are fewer and the repetition frequency that they can perform within the allocated time is higher; more than that, unlike the hurdling events, the time allocated during the international competitions (JWC, EYOF) is longer than for the hurdling events, and the competitors are fewer in number. For example, during the finals, the number of qualified athletes varies between 8 and 12, unlike during a series of runs, when there are 8 runners.

One can notice that although the time at their disposal is longer, the Romanian athletes still have problems adapting their spring run. An example would be the case of athlete GR, who although he performed a sufficient number of warm-up springs, he could not perform any successful jump during the competition.

Figure 3 presents the results for the effectiveness of the use of warm-up time on the track during the throwing events.

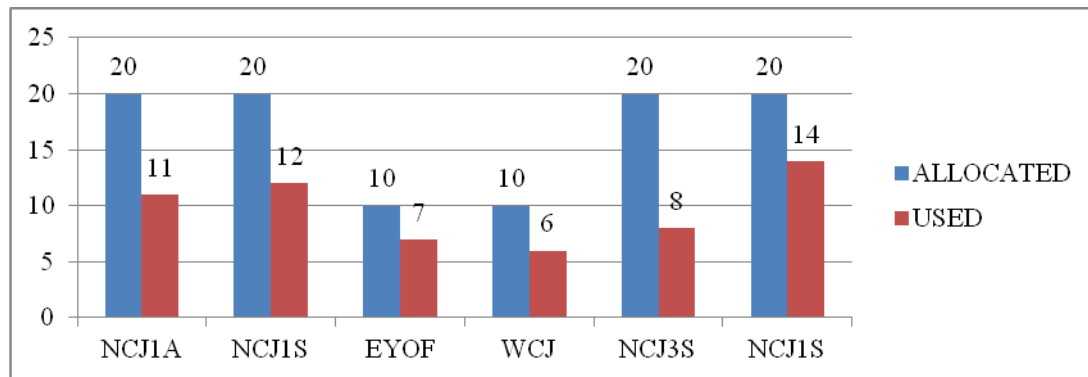


Figure 3 Useful time used in the warm-up for throwing events

In the throwing events the effectiveness of the time used for the specific warm-up varies between 40 and 70%, because of the need to wait for the competition material. In the case of throwing, one can notice a more efficient use of the warm-up time at the event, between 60-70%, this being explained by the higher number of competition materials made available by the organizers, or the fact that some athletes compete with their own competition objects, but also by the fact that the competition materials are sent through fast mechanized means.

The boxing competitions are characterized by the fact that the athletes do not have access to the boxing ring until the start of the game, so that the general and the specific warm-up are performed exclusively in the training room. However, this study has emphasized that there are variations of warm-up times, due to the games finishing earlier, or to the overtimes, caused by subjective reasons (referees or opening festivities) or objective reasons (the score recording devices being broken). Thus, except for the first game, whose starting time is known, for the other games, especially after the 75 kg category, the warm-up times are not specified, the coach and the athlete being forced to rush or to prolong the warm-up according to the ring matches. Figure 4 presents the number of games finished earlier, which had led to the modification of the warm-up times for superior categories.

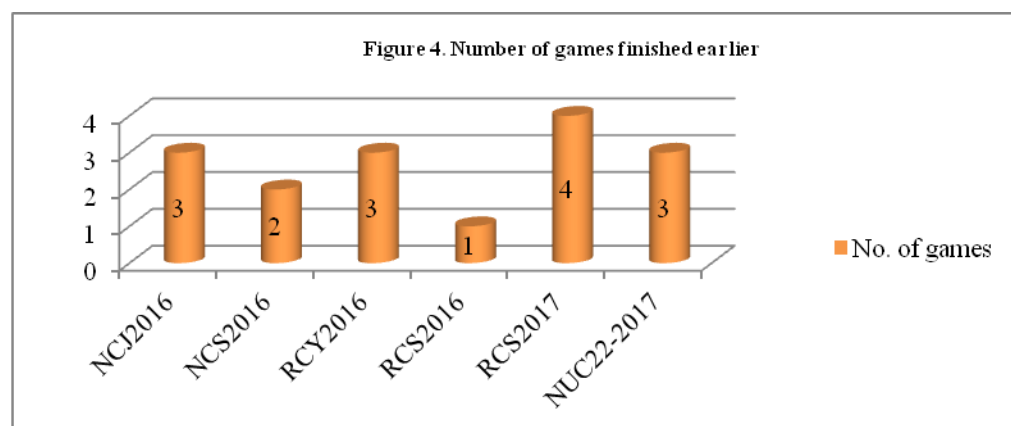


Figure 4 Number of games finished earlier

An analysis of Figure 4 shows that the times made available to the athletes for warm-up are extremely variable, the duration of the warm-up being extremely hard to calculate because of its dependence on the previous matches. An example would be what happened during the Romanian Cup 2017, when no less than 4 consecutive matches have ended prematurely, which has forced the 81 kg boxers to enter the ring after less than 10 minutes of warm-up.

The specific warm-up is performed under the strict guidance of the coach, according to the opponent's specific particularities (long/short reach, reverse half guard, etc.). In many cases it was proven that the athletes give up precisely this type of warm-up, being pressed by time to enter the ring. The situation is even more serious during the competitions

with opening festivities, these being completely unpredictable as far as time is concerned, being prolonged because of sponsor demands, or shortened because of television demands.

This study has analyzed the development of junior I *handball* semifinal tournaments of November and December 2016, in Bacau and Roman. What should be noticed here is the difference between the regular season competitions, where generally the games start at a pre-established hour (if the hall has not other activities planned that could delay the game, such as a volleyball game, whose duration is extremely variable) and the tournament matches, where the starting hour can be decisively influenced by the development of the previous matches, the differences reaching up to 30 cumulated minutes.

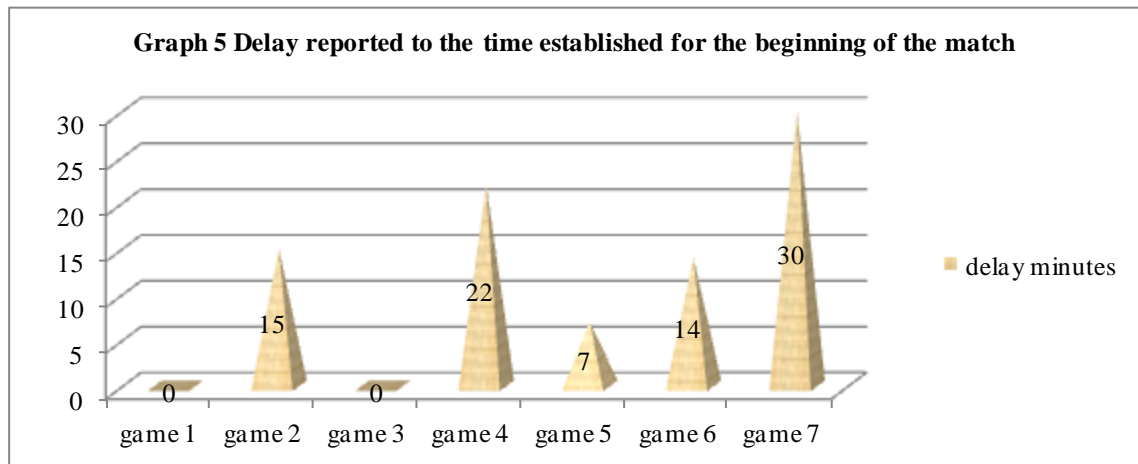


Figure 5 Accumulated delay minutes during the games of the team CS Știința Municipal Bacău

The analysis of the figure shows the fact that only two games out of seven have started at the pre-established time, these being the games that the team CS Știința Municipal Bacău has played as their first game of the day. In the other cases (games 2,4,5,6, and 7) the delays varied from 7 to 30 minutes, which has led to problems regarding the time available for warm-up. More than that, a special problem is that of the difference in warm-up of the main players and the reserves, considering that warm-up is performed by all team players, but some athletes enter the court 10-15 minutes after the game has started.

Conclusions

The results of the research confirm that in some sports the warm-up time can vary according to factors that are independent of the coach's or athletes' will, who are many times forced to shorten or lengthen the warm-up according to the conditions of the competition. This study did not take into consideration the environmental conditions, considering that these can be known right before the warm-up, and the accommodation to it is not a problem.

The research proved that sports training should be more interested in this part of training and competition, considering that reality showed the necessity of introducing the two concepts, of "emergency warm-up" and "warm-up followed by break", which correspond to real situations. This author believes that the athletes' individual differences can generate individualized programs for warm-up so that the athletes could warm-up in different ways, being prepared to face unforeseen situations. It is obvious that an emergency warm-up will not have the same effect as one performed under standard conditions, but it is nonetheless better than an unfinished standard warm-up.

This study has proven also that many coaches perform the warm-up under the same conditions for all athletes, this being the same during competitions. From outside, it seems like an ordered, rigorous and disciplined process, but is it really in the best interest of the athletes? Considering the existence of individual differences, it is obvious that the same drill will not have the same effect on all the members of the group. Thus, there is either a bad warm-up of all individuals, or there are injuries in the first part of the game.

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Methodological Aspects Regarding the Development of Coordinative Abilities in Dance Sport

Andreea Maria Adam ^{a,b}

^a Faculty of Physical Education and Sport, "Dunarea de Jos", University of Galati

^b Human Performance Research Center, Faculty of Physical Education and Sport, Galati

mariaandreea.adam@gmail.com

Abstract

Generally speaking, coordinative abilities are the abilities necessary to optimally manage situations requiring fast and rational action, being very important in accident prevention. Coordinative abilities are the basis for adequate sensorial-motor learning.

Specialized literature deals with **general and special coordinative abilities**. General coordinative abilities are the result of multifaceted training in various motor actions or sports branches. Therefore they are manifest in different areas of daily life by the fact that certain motor situations are treated creatively (Harre, Deltow, Ritter, 1984, quoted in Tudor, 1999). Special coordinative abilities are mostly developed in disciplines characterized by rich technical variety.

Starting from the premise that dance is a complex sport and its practice at the highest level presupposes the optimal development of psychomotor skills, the present study aims at evincing the importance of accurately mastering the components of coordinative abilities and the methodological aspects at the basis of their development in dance sport.

Keywords: *coordinative abilities, dance sport, training, physical preparation*

Introduction

In our attempt at guiding the athletes towards developing their coordinative abilities, it is crucial to know the *factors* conditioning this component of the motor ability.

Synthesizing several points of view (Dragnea and, Bota, 1999; Tudor, 1999), one may conclude that these coordinative abilities depend on a series of *compound factors*:

- mobility of fundamental cortical processes or ability to rapidly alternate cortical excitation and inhibition processes;

- speed of transmitting nervous impulses and quality of muscle innervation;

- functional state of analysers receiving visual, auditory, tactile, kinesthetic information;