

## STUDY ON THE FREQUENCY OF WRIST PAIN CASES IN JUNIOR FEMALE GYMNASTS

DOBRESCU TATIANA<sup>1</sup>, ZAHARIA ANA MARIA<sup>1</sup>

<sup>1</sup> Faculty of Movement, Sports and Health Sciences, University „Vasile Alecsandri” of Bacău, ROMANIA  
e-mail: Tatianadobrescu2002@yahoo.com

### ABSTRACT

Frequently encountered in the junior female gymnasts, the affections of the hand can represent the result of multiple micro traumas at which the hand is subjected during the artistic gymnastics training process, where, through the forces exerted at the articulation structure level and through the developed resistance, the joint structures are debased in time, being chronically subjected to this kind of stress. On the course of evolution of these affections the prehensility is compromised, a complex function that is specifically human, and which has transformed the hand in an essential segment of the female gymnasts' body in making the elements technique at the four apparatus. The compromising of the global functionality of the hand (the prehensility), represents a handicap that is tough to tolerate and compensate by the professional female gymnasts. Starting from these premises, we have developed the research *hypothesis* that accurate identification of wrist pain cases among junior gymnasts should provide much information that should constitute the starting point for an intervention improvement method.

The research methods used were: the study of the bibliographical material, the observation, the testing method, the statistical-mathematical method and the graphical representation method.

Our study wants to observe the frequency of wrist pain cases at junior female gymnasts inside a competitive institutional structure, the “Nadia Comănești” High School of Onești. For the dynamic evaluation of the patients and the quantifying of wrist pain cases, we have used the five clinical parameters.

It has been observed from the beginning that the tested female gymnasts are situated, most of them, in the high seriousness class, at which the intensity of the clinical parameters has registered the highest point.

In this context, we consider to be useful a research on the ways of recovering of the injured athletes, providing a comfortable environment, and favoring the performances in artistic gymnastics.

**KEY WORDS:** wrist, pain, junior, female gymnasts.

### INTRODUCTION

Artistic gymnastics registers, during its evolution, a very high level of technicality, impressing by its difficulty, complexity, virtuosity and spectacular nature.

As a consequence of the technical progress, we observe more often than not cases of injuries, reoccurring old injuries and gymnasts that claim pains in different parts of the body.

Female gymnasts in particular use their fist in a less "usual" manner. The wrist is a critical link between top performance and athletic skills and it is used as a lever for the diversity of movements outside the gymnastics apparatus. Because it is subjected to pressure and highly repeating forces, it becomes a area that is vulnerable to injuries. (L. Teurlings, B. Mandlebaum, B. Starr, 1992).

According to certain specialized literature data, we can observe that the fist joint traumas are generated by the limited degree of this joint's range of motion, much to solicited during the artistic gymnastic techniques, taking into consideration the young age of the people initiated in this sport and the differences in bone growth. (P. Theis, 2000). Based on assimilated information, these causes of a natural and biological nature, can be eliminated only by stopping the training process. (T. Dobrescu, 2008). A good case for example is the European champion Steliana Nistor, who retired

prematurely from the competitive activity because of a necrosis in the left hand, a professional illness for athletes, encountered especially in gymnasts.

In artistic gymnastics, a sportive discipline known for its complexity, the hand can be used in prehensility around a bar, or using the palm as support during the vaults, balance beam or floor exercises. In these cases there are important compression forces associated with torsion forces. (F. Fraisse, 2002). Acrobatic turns and the Tsukahara half-trunk twists have a 60° impact in the wrist dorsiflexion, and when it is combined with twists, it produces ulna deviations. In these cases, the dominant hand's wrist is much more affected (T. Dobrescu, G. Raveica, L. Manole, 2008).

According to certain statistics, the hand and wrist injuries represent 10-20% of the traumas encountered in the French athletes (P. Roure, 2001), of which 5% in male gymnasts and 3.85% in female gymnasts. The Swiss statistics institute classified the gymnastics among the first 6 sports regarding the number of injuries, emphasizing the large percentage of traumas occurred at the fist joint by 5.8% in 2003, and tripled in 2005 (19%), in comparison with other parts of the body.

### MATERIAL AND METHOD

This paper aims to identify the frequency of the hand affections cases and to assess the degree of pain

for this segment in the female junior gymnasts performing in artistic gymnastics.

On the course of evolution of these afflictions it is compromised the prehensility, complex function that is specifically human, and which has transformed the hand in an essential segment of the female athletes' body in making the elements technique at the four apparatus. The compromising of the global functionality of the hand, (of the prehensility), represents a handicap that is tough to tolerate and compensate by the professional female gymnasts.

At first the pain, due to the articular degenerative affection, on which it can be added the swelling, determines ulterior the limitation of mobility, the decrease of muscular force, the compromising of digital and digit-palm pinch, reverberating over the development of the training tasks and, implicitly, over the performances of the athletes.

Starting from these premises, we elaborated the *hypothesis* of the research, stating that the identification of the frequency of wrist pain in junior female gymnasts could multiple information that would constitute a starting point for an improving intervention.

The *research methods* we used were: study of the bibliographical material, observation, measurements and testing method, the statistical-mathematical method and the graphical representation method.

Our study aims to discover the presence and to assess the frequency of wrist pain cases in junior female gymnasts, inside a top performance institutional structure, the "Nadia Comaneci" high-school, in Onesti, using a group of 23 subjects.

For the dynamic evaluation of the patients and the quantifying of efficiency of the treatment that was applied, we used the following clinical parameters:

- spontaneous and provoked pain – at touching and mobilization, as well as the parameters associated with the pain that represent elements of the clinical picture;
- the swelling;
- the limitation of mobility in the wrist;

- the muscular force on the groups that action on the affected articulation;
- the limitation of global functionality – based on a questionnaire referring to the process of motor activities.

Therefore, because the parameter "pain" is subjective, hard to quantify, we appealed to the clinical parameters associated with the pain that depend on it, or determine it, to be able to evaluate in a quantitative way, the results we have obtained.

On the basis of noting every parameter after presence (0), inconsistency (1 point) or absence (2 points), it has been realized a clinical score of pain between 0-6 points.

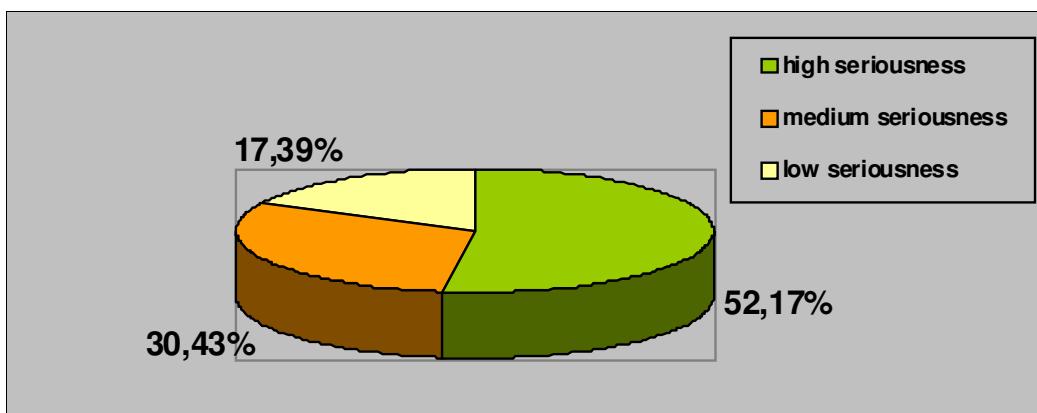
## RESULTS

Based on the initial clinical scores, the 23 cases could be situated from the beginning on classes of affection seriousness:

- for the clinical pain score we considered as highly serious the cases with a score between 0-2 points, medium seriousness between 3-4 points and low seriousness between 5-6 points, close to the normal, represented by the maximum score (6 points), in the case of the absence of the studied clinical signs;
- for the general clinical score we considered as highly serious the cases with a score between 0-5 points, medium seriousness between 6-10 points and low seriousness between 11-15 points, a score we obtained through the addition of all the marks from each of the studied clinical parameters.

Following the study, this allotment on classes of seriousness of pain was obtained:

- in concordance with the clinical score testing:
  - high seriousness – first class: 12 cases (52,17%);
  - medium seriousness – second class: 7 cases (30,43%);
  - low seriousness – third class: 4 cases (17,39%);

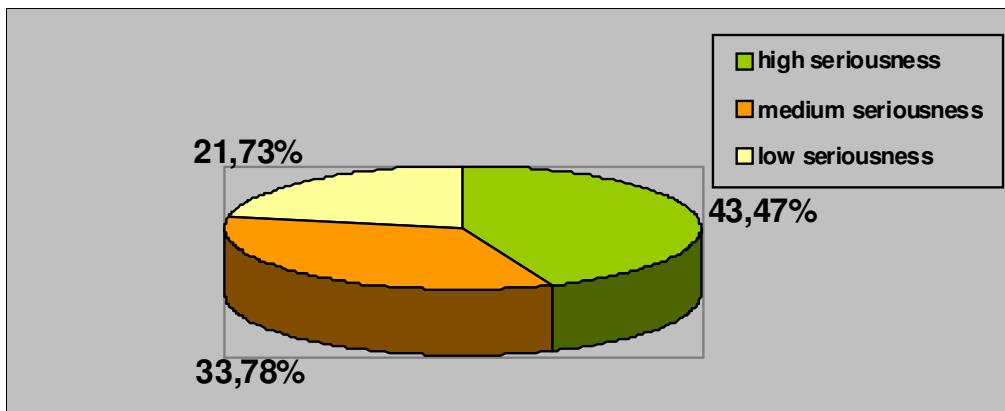


**Chart 1. Ranging the pain seriousness steps according to the clinical score**

- in concordance with the general clinical score testing:

- high seriousness – first class: 10 cases (43,47%);

- medium seriousness – second class: 8 cases (33,78%);
- low seriousness – third class: 5 cases (21,73%);



**Chart 2. Ranging the pain seriousness steps according to the general clinical score**

So it has been observed from the beginning that the tested female gymnasts are situated, most of them, in the high seriousness class, both for the clinical pain score and the general score.

## CONCLUSIONS

The chronic affections of the hand and the wrist pains are frequently encountered in the junior female gymnasts. They can represent the result of multiple micro traumas at which the hand is subjected during the artistic gymnastics training process, where through the forces exerted at the articular structure level and through the developed resistance, the joint structures are debased in time, being chronically subjected to this kind of stress.

In this context, we consider to be useful a research on the ways of recovering of the injured athletes and providing a comfortable environment, favoring the performances in professional gymnastics.

Our attempt proves to be a point of view in the casuistic of injuries for the artistic gymnastics and it has as purpose to preserve the talents, to increase athletes' performance and to insure their longevity.

## BIBLIOGRAPHY

- DOBRESCU T., 2008, Motor profile of the selection and orientation pattern in high performance aerobic gymnastic, Analele Universității din Oradea, Fascicula EFS, Vol. 1, Ed. Oradea University, 57-61.**
- DOBRESCU T., RAVEICA G. MANOLE L., 2008, Aspects regarding the causes of pain at the fist joint in artistic gymnastics, Sport Medicine Journal – the Journal of Romanian Society for Sports Medicine Association, 13, 755 – 764.**
- FRAISSE F., 2002, Pathologie de l'appareil locomoteur chez le jeune gymnaste, Synoviale, nr.110, Paris, France, 1-3.**
- ROURE P., 2001, Le poignet du gymnaste, Colloque médical fédéral, Fédération française de gymnastique, 13 -16.**
- TEURLINGS L., MANDLEBAUM B., STARR B., 1992, Wrist Pain in Gymnastics, Technique Magazine, USA, 11-15.**
- THEIS P., 2000, Potentiels et risques de la gymnastique artistique féminine. Gymtechnic nr. 31, FFG, Paris, France, 3-9.**