Study on development of joint mobility to middle school students

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Abstract: ***Introduction.*** The ability to easily execute a broad movement is known as a mobility and sometimes flexibility is especially important in training. It is a prerequisite execution skills and develops with amplitude greater ease with which the athlete can perform fast movements. The success of the execution of such movements depends on the amplitude of the joint (or the extent of movement), which must be larger than that required by the respective movement. Therefore it requires a reserve of mobility, that person must develop in order to be safe.

Material and methods

Methods for the development of mobility are three in number, namely the method of activating technique to obtain a maximum mobility of the joint, only by activation of the muscle; liability method to acquire a maximum mobility with the help of exercises with a partner or by using weights and combined method (FPN) require the person to flex active segment up to the joint, then execute a contraction isometric maximum resistance from a partner.

Results

Small schooling stage, the ability flexion of the joints pelvis, shoulder, spine continue to grow, reaching maximum values to 8-9 years.

Discussions and conclusions

In step 10-14, mobility training should be continued because improvements are achieved harder; belt spine mobility and scapular-humeral do not increase, unless action is taken in this regard.

Keywords: mobility, middle school, students.

Introduction

Mobility determines the correct performance of technical procedures and other preparatory exercises from different branches of sport, or for the acquisition of basic motor skills correctly and applied. Usually, mobility is associated with better physical performance, with coordinated movements and associated with a well developed musculoskeletal system. Good mobility is required in all driving documents. Mobility is a quality motor, as with other parameters determine the characteristics and movements [1].

Mobility is man's ability to perform the movements of the body segments with different amplitude.

It is expressed in degrees, given that locomotor movements segments are different angles between them. The structure determines the nature and type of joint movements to be performed in them, and the amplitude is mainly dependent on the impression quality ligaments, tendons and muşchiurilor. Within their muscle elasticity may change to a large extent by neuropsychological processes influence muscle relaxation and stretching exercises stretching type. It considers that the reduction in elasticity antagonists movements amplitude is determined by reflex action defense, reducing the extent of the contraction, the resistance movement.

As you increase the mobility (muscle elasticity is increased through practice, without negatively impacting the return to the original position) simultaneously with exercises to increase flexibility as is recommended exercises of force, which in turn causes joint mobility.

Suppleness is defined as the body's ability to perform large amplitude driving actions. In our case we prefer the term flexibility to define greater or less than the magnitude with which a movement - mobility (joint) and elasticity (tendons, ligaments and muscles), the terms used by some authors to name this capacity It is subordinate body suppleness, highlighting particular aspects of it [2].

Suppleness low creates numerous drawbacks, namely:

- Lengthens driving properties and improvement activities;
- Favors injuries;
- Reduce development indices other driving skills (speed, skill, strength and endurance) and limits their use with maximum efficiency;
- Decreases efficiency in carrying out the driving actions, lack suppleness being supplemented by further efforts by large energy expenditure;

- Decreases execution quality, expressive movements could no longer be enforced, offhand, breezy and easily;
- Suppleness levels peak around age 15-16 years, and at the joints and movements even later. After this age, especially in the neexersării, flexibility decreases gradually. The assertion that there is a suppleness in children (joint mobility) higher however is not fully justified. The fact is that childhood is the most effective for developing this quality [3].

Joint mobility within the natural manifestation is a characteristic feature resulting from the very existence of the joint system of the body. It can be said that an individual has a sufficiently developed motor quality in relation to the requirements of a particular activity if sports nostrum. This quality must be so developed and perfected as to integrate smoothly into gear entire body in that activity and to support easily the role that it has a role that he can not only do amid other qualities dead which is filled permanently.

The naturalness of joint mobility is subject to a number of general factors such as age and gender, especially by a number of specific factors: the nature joints, atructura capsule, ligaments, tendons, and muscles that directly concerned. It is known that motor activity evolves inversely with age. Throughout its evolution, the joint undergoes a series of changes in the degree of mobility. We therefore witness a biological process of gradual loss of a deadly qualities result in limiting the amplitude in carrying out movements.

Experiments conducted proved that the loss of these qualities may be delayed by special physical practice of exercises that maintain, develop joint mobility and muscle elasticity degree higher natural motion [3].

Exercise by tension, pressure or torsion exerted on the joints, activates them, thanked them maintain a degree of mobility year delay and, if possible, aging, deosificare premature, so squeeze their functions.

Given that joint mobility and muscle elasticity are influenced by other qualities dead and they in turn influence appears as a necessity concern for increasing and improving the mobility and eleasticitate [4].

The purpose of the paper is to observe the development of joint mobility to students participating in the experiment by participating in physical education classes, namely those aimed at developing the driving attributes.

Materials and methods

The active method is a technique that yields a maximum joint mobility, muscle activation exclusively. This method refers to the degree of flexion of the agonist muscle and to relax and releasing of such a force to the antagonist muscles. If using a static method, the athlete flexes two segments of a member to the point of extreme mobility while maintaining the position for 6-12 seconds. Athlete ballistic method achieved by balancing the assets of a segment's membership is mobile segment to another building [5].

Passive method to acquire maximum mobility with the help of partner exercises or using weights. In the first case, the partner keeps or pushes a member to peak mobility without active involvement of the subject. This method can be applied to the following joints: ankle, pelvis, spine, shoulder, wrist. It is recommended to use weights (barbells, gantele) for the development of mobility ankle, knee and shoulder. But I do not recommend the pelvis or spine joints because the weight may exceed the tolerance Athlete can press on two segments of a joint bending them over limits, cee needles can lead to possible muscle tears. In any case, the weight must be reduced, carefully applied and gradually increased. Such training should be performed always under strict surveillance [6].

Combined method (FPN) requires the athlete to actively flex segment up to the joint, then perform a maximum isometric contraction to resistance from a partner. Athlete voluntarily flex segment to an angle exceeding previous limits. Runs same isometric contraction through a broader and stronger resistance against opposite a partner. To meet the needs methodological isometric contraction is maintained for 4-6 seconds and carried out series of repetitions to limit the athlete's physical tolerance.

Scale joint mobility comprises 3 levels of Cartage and 3 hypermobility:

0 - joint ankylosis;
l - severe limitation;
2 - slight limitation;
3 - normal mobility;
4 - slightly higher than normal;
5 - steep increase over normal;
6 - joint instability.

The experiment was conducted at elementary school no. 169, Bucharest students of class V-C during September 2015 - June 2016. The group of students included 16 girls, 12 boys and underwent initial testing and final.

Results:

The tests were as follows:

1. Evaluation of scapulo-humeral joint mobility. The initial position: standing off, raising and lowering their arms stretched above his back. We measure the distance between the hands (in cm).
2. Evaluation of complex mobility of trunk muscles (spine) and legs (hamstrings, hamstrings, triceps sural). One of the evaluation tests of mobility part coarse trunk - hip - standing torso forward bend test. The initial position: sitting on the edge of a bank, bend the trunk forwards (knees straight), measure the distance from toes to fingertips.

To assess the scapulo-humeral mobility we obtained the following results of the two tests (see Figures 1 and 2).

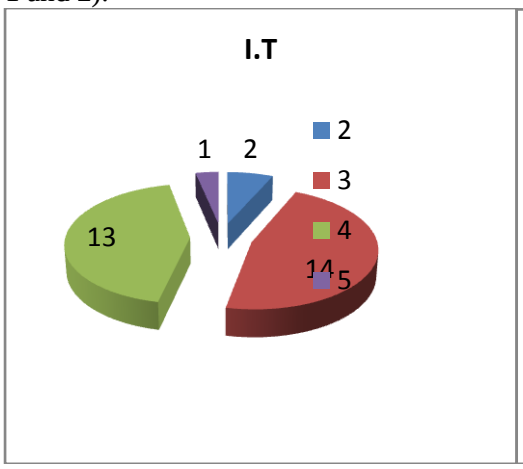

Fig. 1. The results of initial testing for scapulo-humeral joint mobility assessment

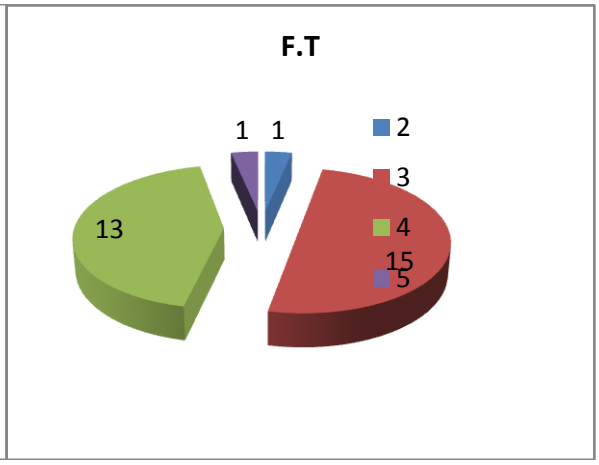

Fig. 2. The results of the final testing scapulo-humeral joint mobility assessment

Figures 3 and 4 are the results obtained in evaluating the mobility of the trunk and legs.

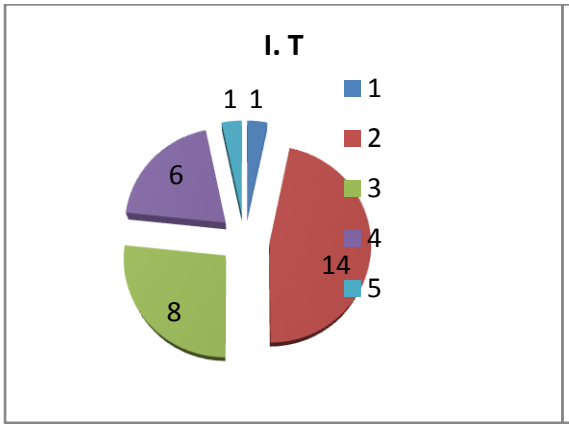

Fig. 3. The results of initial testing for mobility assessment torso and legs

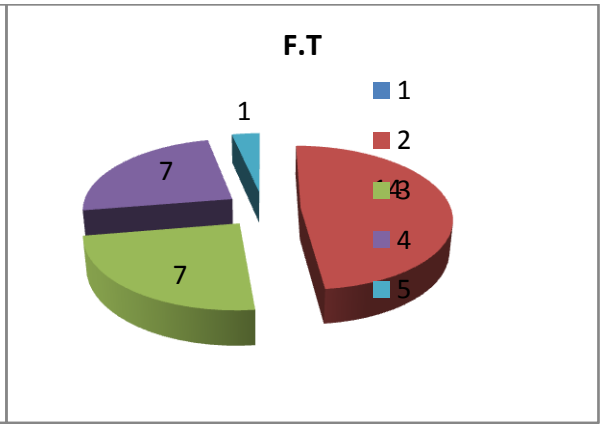

Fig. 4. The results of the final testing mobility assessment torso and legs

Discussion and conclusions

Mobility deficit may be due to soft tissue or damage (contractile and / or uncommitted) crossing a hinge or joint damage through proper mechanism lesion times due to both cases.

Loss of normal motion amplitude meets:

- Prolonged immobilization segments (hip spica cast posts subject imposed by pathology);

- Restrictions to mobilize all normal spring due to pain, bone deformation stations or vicious;
- Loss of flexibility that determines the non-use of areas of joint mobility;
- Neurological disorders that cause muscle imbalances (paralysis, spasticity);
- Connective tissue disease (as in rheumatic diseases) or the existence of joint superjacent skin disorders (eg - cellulitis);
- Tisulo-articular trauma (direct trauma to the articular structures - such as the rupture of the meniscus, local inflammation, plaque, burns).

In appreciation of deficiency joint mobility must differentiate true deficit limiting active mobility due to insufficient muscle strength, a limitation of mobility due to pain (which has no correspondence in place or intensity of joint damage), or a joint stiffness (absence of a pathological substrate - spasticity, rheumatic stiffness) because stiffness, defined as weight (embarrassment) to mobilize the joint can occur due to the thixotropic phenomenon. In humans, the thixotropy is the cause of prolonged rest, resulting in a macromolecular arrangement in such a manner that it prevents the movement.

Limiting mobility impairment that is based on is called soft tissue contracture. The soft tissue is represented on the one hand muscles composed of muscle tissue (the tissue contractile par excellence) and the fibrous skeleton, and on the other hand necontractil of uncommitted structures (skin, capsule, ligament, tendon). Contracture of muscles is called contracture miostatică nature and logically limiting joint range of motion because muscle may only Involvement substrate tissue or muscle contractile tissue Involvement Co and the contractile muscle necontractil.

Above a certain limit, increasing mobility (as evidenced by the scale above) can prove negative as tension joints become permanently active. Passive joint stability by compromising or appliance capsuloligamentar (elongation, breaking it) remains the only active component stability ensured by periarticular muscle tonic contraction. In case of fatigue or muscle relaxation increases the risk of these dislocations or sprains. Hipermobilitatea, which allow for normal physiological movement outside amplitudes in time will cause a premature wear of the cartilage of these joints.

Thus, glenohumeral joint assessment by the two tests, shows an improvement in mobility to students participating in the experiment. The fact that the top two values on the scale that expresses the degree of mobility has not been assigned any of the students demonstrate that they have no severe limitation or joint ankylosis. Also, no child has joint instability.

When evaluating mobility torso and legs, students have achieved an improvement in values obtained in final testing, from baseline. Here is observed, due to the results recorded that the students did not stiffen joints, but no joint instability.

References

[1]. Buțu I.M. (2015), *Gimnastică ritmică – baze generale*. Bucureşti: Editura Fundației *România de Mâine*, p. 56.

[2]. Bompa T. (2001), *Dezvoltarea calităților biomotrice*, Constanța: Editura Ex. Pronto, p. 67.

[3]. Dragnea A, (1991), *Teoria* şi *metodica dezvoltării calităților motrice,* Bucureşti: Compendiu, p.98.

[4]. Dragnea, A., (1996), *Antrenamentul sportiv*. Bucureşti: Editura Didactică şi Pedagogică, p.23.

[5]. Hidi, I.L., (2007), *Fitness programe pentru optimizarea condiției fizice*. Bucureşti: Editura Didactică şi Pedagogică, p.51.

[6]. Şerbanoiu, S., Tudor V., (2007), *Teoria şi metodica educației fizice şi sportului*, Bucureşti: ANEFS, p. 29.