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THE ROLE OF ANABOLISANTS IN KINETOTHERAPY

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Abstract

Combining physiotherapy with administration of testosterone results in increased exercise capacity of the patient and the therapy with growth hormone can improve fibromyalgia and chronic inflammatory diseases.Although physiotherapists can not prescribe hormonal therapies, on the market nutritional supplements are to be found, able to stimulate the secretion of testosterone or somatotrope; the latter may be increased also by L-carnitine or melatonin.

Keywords*: androgens, somatotrope, kinetotherapy*

Introduction

In men with hypogonadism, association of physiotherapy with hormone replacement with testosterone leads to faster and better results in terms of improving the functional capacity of the motor system [1].

Special attention needs testosterone replacement therapy in elderly men. Thus, a recent study points out the following [5]:

- at aged men low circulating testosterone is correlated with decreased muscle strength and cognitive performance, increased adiposity, increased insulin resistance
- testosterone hormone replacement provides benefits, but not so consistent, because of differences in dosage and duration of therapy
- the best results are obtained with high doses and prolonged treatment periods, at patients with low levels of plasma testosterone
- superior results with regard to anabolic effects are obtained by endurance training
- testosterone therapy can not be recommended for the general population of elderly men because of them, those with hypogonadism have an increased risk of catabolic effects
- in the elderly, androgen hormone replacement may cause worsening of sleep apnea, gynecomastia, polycythemia, increased PSA

Adult growth hormone deficiency can be cause of fibromyalgia and chronic inflammatory disorders, expressed by musculoskeletal pain [3].

From the above it appears that administration of testosterone or somatotrope may be associated with physical therapy speeding recovery of patients.

In the UK, physiotherapists are authorized to prescribe nutritional supplements since 2005, and the following drug classes [13]:

Class A	Morphine (IP) Morphine Salts Fentanyl (IP) Oxycodone (IP) any class B drug with injectable administration
Class B	Codeine (in all preparations) Dihydrocodeine (IP)
Class C	Tramadol Diazepam (IP) Lorazepam (IP) Temazepam (IP)

These are not drugs with muscle anabolic effects, so including for physiotherapists from the UK, hastening musculoskeletal recovery solution remains prescribing supplements.

Anabolics and stimulants of hormonal secretions

On the market there are nutritional supplements and exercise support based on plant extracts and amino acids. They are primarily used by practitioners of bodybuilding, but can be administered to patients suffering from various musculoskeletal diseases because stimulates the secretion of testosterone or somatotrope hormone.

Thus, *Tribulus alatus* extract increases free testosterone levels when it is administered to laboratory animals (rat) [7].

Tribulus terrestris is widely used as a supplement to support the effort and gain muscle mass. However, studies have shown that simple *Tribulus terrestris* extract does not improve androgenic status or physical performance of athletes, since only the addition of pharmaceutical components to vegetable extract makes plasma levels of testosterone to increase [12].

There are also plants with adaptogenic effects, useful in enhancing athletic performance: *Schizandra chinensis*, *Eleutherococcus senticosus*, *Panax ginseng* [6]. These adaptogens balance testosterone/cortisol ratio, resulting in stimulation of anabolism.

Experiments carried out on rats have demonstrated that animals whose feed was supplemented with 5% *Panax ginseng* for 60 days had high levels of plasma testosterone levels, while supplementation with 1% did not have the respective effect [8].

One study conducted on laboratory animals showed that Withania somnifera root powder produces increased plasma testosterone levels in healthy rats, but not in those suffering from diabetes [2].

Regarding the essential amino acids, a recent study showed that administration to individuals benefitting from the endurance training results in increased muscular strength and both plasma testosterone and somatotrope levels at rest and during exercise [10].

Regarding arginine supplementation, there is an interesting phenomenon, namely oral supplementation increased plasma levels of growth hormone, in turn supplementation

associated with physical exercise does not cause an increase in blood concentration of somatotrope by the same magnitude as that caused only by the exercises [9].

Carnitine is used as a supplement to support exercise, particularly in body building and athletics [11].

In patients with thalassemia and small stature administration of L-carnitine stimulates the secretion of somatotrope and consequently the height gain [4].

Oral administration of melatonin stimulates the somatotropic secretion, likely by the inhibition of the release of somatostatin [14].

Conclusions

1. Hormonal therapies are needed for hastening recovery in musculoskeletal disorders, but for now physiotherapists are not entitled to prescribe such drugs.

2. Luckily, nutritional supplements found on the market are able to stimulate the secretion of testosterone or somatotrope.

3. Somatotrope secretion can be increased also by L-carnitine and melatonin.

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EXPERIMENTAL STUDY ON THE CONSTANT PERCEPTION BASED ON THE COORDINATES OF CENTER OF GRAVITY

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Abstract:
The paper presents an experimental method used for estimating the constant perception of motion. The experiment is based on performing the vertical jumping on both legs, on right or left leg in different situations: normal conditions (opened eyes), blind folded or visualizing the image on the mirror. The results revealed the fact that the participant in the test was able to reconstruct the environment while jumping on both legs and on the left leg.
Keywords: space perception, motion, vertical jumping

1. Introduction

The motricity has a fundamental biological role, but also a psychological role in relation to human interaction with the environment regarding the autonomy of its actions. There is a functional and structural correlation between sensitivity and movement which is self-adjustable within the command and control system frame. When the body is moving it is possible that the stimuli reception is differentiated, thus providing adaptations to the biological needs and hence conserving the balance.

A variety of explanatory models that have evolved over time have been proposed in order to facilitate the understanding of psychological perception. Perception refers to the means by which information received from the environment through the sense organs is transformed into the experience of objects, events, sounds, tastes" (Roth, 1986)

The sensory-tonic model is taking into account numerous elements involved in perception. Wapner, Werner and Chandler (1951) have developed this model that first they called sensory-tonic. According to this model the sensory and tonic have common dynamic properties which are contributing to achieving a total dynamic process in an equivalent manner.

Perception is not exclusively sensorial, but also visceral. To perceive an object in front of us is not enough to consider only the position of the object in the visual field, but we need to know also the posture, the head position, etc. This model has great significance for understanding complex forms of perceptions, including also the perception of space.

The transaction model of Ames (1955) and Ittelson (1960) deals with the perception of the exchanges between organism and environment. According to this model, the perception involves issuing an assumption, not necessarily being aware of it. People tend to choose assumptions based on their prior experience and the significance is related to personal experience. This experience involves the anticipation of future.

Another model was developed by Gibson (1979), named the ecological model considering that perception is the plug with the environment. The information is organized in stimuli and