

Abstract

Title

Compensatory programme to lower the health risks of volleyball players

Problem

Volleyball is a sport with great unilateral load on the dominant upper extremity as well as great load on lower extremities, spine, and joints. The early specialization together with a constant unilateral load leads in most cases to muscle imbalance, deficient posture and further problems with a muscle apparatus.

Objective

The objective of the study is to perform a detailed examination of a posture and muscle imbalances and lateral asymmetries by the means of a complex kinesiological analysis and a measurement by the InBody 3.0 apparatus and according to the results of the examination put together compensatory exercises for the seasons of 2012 and 2013 with the aim of improving the muscular apparatus of the highest division volleyball players of the team PVK Olymp Praha and assess their effect.

Methods

A group of 12 elite junior female volleyball players was measured by the InBody apparatus to inform us about the state of lateral asymmetries and were also examined by an experienced physiotherapist using a complex kinesiological analysis especially focused on body posture, shortened muscles and performance of basic movement patterns. The musculoskeletal examination was performed every three months in order to test the effect of compensatory exercises that were focused on counterbalancing the lateral asymmetries. This study assessed the state of muscular apparatus of the tested subjects and tested the effect of the compensatory programme that was focused on counterbalancing the lateral asymmetries and which apart from the breathing and stretching techniques used the Bosu balance trainer and the exercise elastic band. The effect of the compensatory exercises was tested every three months by an experienced physiotherapist as well as by the InBody apparatus and analyses by statistical methods such as ANOVA, Bland-Altman diagram and a paired t-test as well as by the means of the percentage analysis.

Results and conclusions

When testing the effect of the compensatory exercises the subjects exhibited improvement in most of the tested areas, though the results were statistically insignificant. When assessing the upper body part, the first year was more successful, we noted mean improvement 0.018 valid for

79.1% of subjects. On the contrary the lower extremities needed longer time period for improvement, so we noted the mean improvement 0.031 valid for 61.9% of subjects after the two full years. Nevertheless, the subjects noted improvement in lower back pain as well as the dominant upper extremity shoulder pain, which is according to the load of training sessions considered a success. We realized that individual compensatory programme would exhibit better results but we can still state that balance exercises with a Bosu balance trainer and exercises with an exercise elastic band seem to be useful for unilateral sports, such as volleyball.

Key words

Compensation, InBody, intervention, kinesiological analysis, muscle imbalance, volleyball