

Acute effects of random versus blocked proprioceptive exercise stimuli on balance ability

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Introduction

Balance is an important coordinational skill that could be either direct or reflex-based. It has an important role in different sport performance factors, like agility and maximum velocity. The use of unstable versus stable surface is superior in balance improvement, however the exact mechanisms are unclear due to methodological limitations. The purpose of the present study was to compare the acute effects of two proprioceptive exercise sessions: landing on a tilted surface where the direction of tilt was known (blocked practice) or unexpected (random practice)

Methods

Fifteen healthy male physical education students participated in the study. Following a standardized warm-up (cycling and stretching) motion tracking sensors were put on the foot, shank, thigh, and pelvis. The outcome measures were as follows: postural sway during balancing on the top of a Togu Jumper, during standing on a flat surface after accommodated to a tilted surface. and during balancing on a flat surface after landing from a box. For the proprioceptive training, participants performed sixteen landings on a tilted surface where the direction of tilt was either known or unknown.

All balance tests were performed unilaterally and conducted before and immediately after training.

Result

After the measurements, we compared the blocked and randomized practices results. As for the balance system's adaptivity, we found significant development after the blocked stimuli practice ($p=0,042$). The blocked and the randomized stimuli do not cause such development in the balancing ability on uncertain surface ($p=0,098$).

Conclusions

Putting the examination in a nutshell, the blocked stimuli have more acute effect on the balance ability than the randomized one. But the difference between them was hardly significant.