

TRAINING EFFECT ON BALANCE CONTROL IN YOUNG ALPINE SKIERS: GROUND REACTION FORCE STUDY

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INTRODUCTION: Balance is a very complex motor ability that involves keeping a specified position on a small area, ground or object. If we observe the definition through the different situations on the skis, it can simply be concluded that balance is closely related to skiing. In order to maintain balance on the skis, muscle force as well as neuromuscular coordination is important to a skier because they enable him/her to maintain stability and balance in every moment. Therefore, muscle fatigue might have significant influence on stability and efficiency in skiing.



METHOD: Given the lack of "on-snow" practice days that is present in Croatian alpine skiing team, this work has an aim of determining how much a specific physical conditioning micro cycle lasting 14 skiing days has an influence on balance development in younger skiers as well as how to begin the yearly training process. The sample comprised 8 skiers of younger age categories of the ski club *Samobor* that were divided into two groups (A and B). Group A had an identical training program as Group B with an addition of balance exercises. In two time-points of the preparatory period (10.06. and 30.06.2006.) training micro cycle has been conducted at Hintertux, Austria. In order to measure the balance, single footed stand of 10 sec duration on the ground reaction force platform was measured. Two components of force vector that are dominant in balance were registered (Fx and Fy). Standard deviation of the signal was used as variable. T-test was used in order to detect the differences between groups.



RESULTS: T-test results show no statistically significant difference in Fx (0,07) and Fy (0,03) variables in Group A. T-tests for Group B also show no statistically significant differences in Fx (0,09) and Fy (0,13). Results show that micro cycle had no impact on balance development as measured by the test described above.

DISCUSSION: Given an absence of "on-snow" training days, the problem of timing and accuracy of a specific micro cycle is especially important. Croatian ski coaches can use such information in order to be more accurate in directing the training process. Based on the results it is evident that there is no need to include specific physical conditioning exercises on the ski camp in the second part of the day, because there is no statistically significant difference in development. Therefore, the second part of the day should be spent on the snow in methodically directed practice.

CONCLUSION: This work might have an application in planning and programming of training micro cycles in alpine skiing.

REFERENCES

1. Kasović, M., Mejovšek, M., Medved, V., Lončar, V. (2007). *The Role of muscle fatigue on Knee Biomechanics during Single Leg Landings*, Proceedings of the 12th ECSS Congress, Jyväskylä, Finland.
2. Mejovšek, M., Kasović, M., Lončar, V. (2007). *New laboratory test for dynamic stability in ACL deficient knee joint*, Proceedings of the XXIth ISB Congress, Taipei, Taiwan.
3. Kasović, M., Medved, V., Cifrek, M., Mejovšek, M. (2006). *Dynamics stability in landing with ACL deficient knee joint*, International Congress 5th World Congress of Biomechanics, Munich, Germany.