

ANALYSIS OF THE TAKE-OFF PHASE OF REVERSE DIVES FROM 3-M SPRINGBOARD: APPLICATION IN PRACTICAL TRAINING

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In recent years, the understanding of biomechanical factors contributing to the performance in springboard diving has increased. Besides the exact demonstration of the dive itself, which will be judged in the first place, the height of the flight is likewise known to be important for the final scoring procedure.

Requirements for a successful and exact dive are set during the take-off phase. From different investigations some influence factors in reverse dives are known, such as vertical/horizontal velocity of the divers C.G., angle relative to C.G. at take-off, rotational velocity of the arms, rotational velocity of the trunk,...

Members of the West German diving team were videotaped in training and competition. An Ariel Performance Analysis System (APAS) was used to digitize the pictures and process the data. Together with athletes and coaches, resulting biomechanical parameters were discussed, strategies for following technical training were developed.

In professional coaching there is the problem of having "data on hand". Since new devices for analysis are available, which meet the demands of practice, the purpose of this paper is to give report of this application and the effect on the technical training.

BIOMECHANICAL DEVELOPMENT OF THE STEPPING EXERCISE MACHINE FOR TRAINING

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Today, the most popular training machine for cardiovascular development is the stepping machine, relatively new device for aerobic or anaerobic exercise. The purpose of this paper is to follow the development of the stepping machine from a biomechanical and physiological point of view. This paper discussed the research conducted in the development of the machine, the nature of training possible with the machine and the potential of the stepping machine for training purposes in sports events and for rehabilitation. The discussion looks at mechanical and physiological work comparisons and covers the question of local or general training effects.

THE EFFECT OF LOADING AND UNLOADING ON SELECTED INDOOR AND OUTDOOR PLAYING SURFACES

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The purpose of this study is to investigate the differences among selected indoor and outdoor playing surfaces concerned with shock absorption capacity, deformation, modulus of elasticity, compliance, and energy loss. Also, the homogeneity of each tested playing surface, at four locations, was investigated. Instron Testing

Instrument was used for applying 13.145 KN compressive loading and unloading on standard disk samples (n=44) , five centimeter in diameter, of eleven selected indoor and outdoor playing surfaces. During loading and unloading, four dependent variables were extracted and calculated from the stress strain curve by using the Hyperplot software. One-Way ANOVA was utilized for testing the differences among the playing surfaces and Chi Square was used for testing the homogeneity of each playing surface at four different locations. All tested playing surfaces showed differences among the investigated variables except the compliance during unloading which shows no differences. Furthermore, during loading and unloading the playing surfaces showed homogeneity. Sportflex surface produced the highest absorbed and returned energies, whereas, the Supreme Court surface produced the lowest energy absorbed and the highest energy recovered. Sportflex and Super-X (1.205 cm thick) playing surfaces were observed to have the highest deformation whereas, Super-X produced the highest recoil. Supreme Track surface produced the lowest deformation and recoil. Supreme Track surface produced the highest modulus of elasticity of the playing surfaces during loading and unloading. However, Super-X (1.205 cm) and Laykold showed the lowest modulus of elasticity during loading. During loading, Super-X surface had the highest compliance of the playing surfaces whereas Supreme Court and Supreme Track surfaces had the lowest compliance. Loading Sportflex surface resulted in a higher energy loss than Supreme Court surface.