

# **Modern Principles of Training in Exergames for Sedentary Seniors: Requirements and Approaches for Sport and Exercise Sciences**

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## **Abstract**

Reviews of the literature show that computer-animated games are ascribed a potential in motivating home-based exercise. In order to develop such “exergames” for sedentary seniors, three main tasks are identified and performed in this paper from a sport science point of view: First, a training target and physical exercises must be conceptualized, suitable for preventive training, for home-based execution and for integration into computer-animated games. Second, volume and intensity of the training have to be determined, including adaptations for different fitness levels and progression rules for continuous training. Third, criteria of movement quality should be defined for monitoring by technical sensors, recognizing beginning and end of series and decision-making on changes of training configuration on different time scales.

For each task, the literature is reviewed and the solution for the project at hand is described. The first and third task seem to be solved due to a comprehensive literature base and to technical development, respectively. On one hand, approaches to the second task can be based on well-accepted general principles of training. On the other hand, the status of underlying theories does not allow derivation of concrete values for volume and intensity. Therefore, specific trials are necessary.

**KEYWORDS: ELDERLY, EXERGAME, PREVENTION, SERIOUS GAME, TRAINING PRINCIPLES**