Influence of a new sport program on recruits' physical fitness during basic military training

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Introduction:
Physical fitness is a crucial factor for the successful and injury-free completion of basic military training (Roos et al., 2015). The goal of the present study was to investigate whether a specific and progressive physical fitness training program instructed by Swiss Army personnel can increase the recruits' physical fitness compared to the standard army physical fitness training program.

Methods:
Two study groups participated either in the standard army physical fitness training (control group; CG) or in a newly developed sport program (intervention group; IG) during the 18 weeks of basic military training. A total duration of 180 minutes of sport related physical training per week was scheduled for the CG and 240 minutes for the IG. For the assessment of physical training content and duration, the instructors answered a questionnaire after each training session. The physical fitness of both groups was tested in weeks 2, 10 and 16 of basic military training using the fitness test battery for the recruitment of the Swiss Army (Wyss et al., 2007). This fitness test battery consists of five disciplines (progressive endurance run, seated 2-kg-shot put, standing long jump, trunk muscle strength and one-leg standing test) and results in a total fitness score ranging from 0 to 125 points. A t-test for independent samples was executed to identify group differences at each time of measurement. To analyse the changes in the total fitness score of each group, a one-way analysis of variance with a Bonferroni post-hoc test was applied. The level of significance was set at $\alpha = 0.05$.

Results:
During weeks 1 to 10 of basic military training, the CG participated in 98.59 ± 68.68 and the IG in 182.92 ± 58.27 minutes of physical fitness training per week. From weeks 11 to 16, 67.28 ± 61.69 and 98.22 ± 69.50 minutes of training per week were conducted in the CG and the IG, respectively. Seventy-one recruits (30 CG; 41 IG) completed all five disciplines of the fitness test battery at all three times of measurement. At the beginning of basic military training, the total fitness scores of the two groups (CG = 76.07 ± 16.69; IG = 77.12 ± 13.72 points; $p = 0.771$) were not significantly different. In weeks 10 and 16 of basic military training, the IG achieved a significantly better result than the CG (week 10: CG = 69.50 ±14.22; IG = 83.24 ± 16.64 points; $p = 0.001$; week 16: CG = 64.63 ± 13.96; IG = 72.95 ±14.18 points; $p = 0.016$). In the CG, the total fitness score was by trend decreased in week 10 (-8.64%; $p = 0.281$) and turned out to be significantly lower in week 16 (-15.04%; $p = 0.012$) compared to week 2. The IG by trend increased the total fitness score from weeks 2 to 10 (+7.94%; $p = 0.196$), but then significantly decreased it during weeks 10 to 16 (-12.36%; $p = 0.007$).

Discussion:
Neither the CG nor the IG achieved the scheduled duration of weekly physical fitness training, which is mainly due to the organizational framework of the Swiss Army. Nevertheless, the fitness test results from week 10 showed that with a specific physical fitness training program, the physical fitness of the recruits might be increased compared to the standard army physical fitness training program. However, the results from week 16 indicated that without continuation of a certain amount of specific training, the achieved fitness level cannot be kept or even further increased.

References:
Roos, L., Boesch, M., Sefidan, S., Frey, F., Mäder, U., Annen, H., & Wyss, T. (2015). Adapted marching distances and physical training decrease recruits' injuries and attrition. *Military Medicine, 180(3),* 329-336.

Wyss, T., Marti, B., Rossi, S., Kohler, U., & Mäder, U. (2007). Assembling and verification of a fitness test battery for the recruitment of the Swiss Army and nation-wide use. *Schweizerische Zeitschrift für Sportmedizin und Sporttraumatologie, 55(4),* 126-131.