

Lower limb injuries epidemiology and risk factors in army recruits from Chilean military academy: A prospective cohort study.

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Abstract

Purpose: To quantify injuries and to identify intrinsic risk factors for lower limb injury that could be modified or prevented through training. **Relevance:** Finding modifiable intrinsic factors that increase the risk is crucial, because it would allow to carry out a prevention program in the most vulnerable subjects or to add a new cutoff point for the admission physical tests. **Participants:** 193 subjects participated (mean 19y.o., SD: 1.2y.o.), 84.97% men, first year army recruits. **Methods:** Closed Prospective Cohort Study since February until November 2009. Subjects were assessed at the beginning of the period through Single leg triple hop test and Star Excursion Balance Test (SEBT). In order to classify the physical fitness we used the admission physical test, including time to run 3200 m, sit-ups and push-ups in 60 seconds and timed 1500 m swimming. Recruits were followed-up through passive surveillance. Academy's physician adjudicated injuries. Diagnosis and resting time was recorded on physical activity restriction certificate (PARC), which were checked fortnightly. **Analysis:** Data collected about PARC was analyzed by month and by trimester. The cumulative incidence was calculated. We compared injured and non-injured for the variables measured, (Wilcoxon and Kruskal–Wallis, respectively). Survival analysis using Cox's regression model was used for risk. Alfa 5%. **Results:** Injury cumulative incidence was 36.27%, 64.29% in February-April. 76% probability of injury in February-April. 59.42% of injuries were located in the functional unit knee-leg and 36.2% in ankle-foot. The most common diagnoses were: Sprains (24.28%), Tendinitis and Patellofemoral Pain Syndrome (18.57% each). The median of days lost due to injury was 10, range 3–22. In admission physical tests, injured subjects got worse scores in comparison to uninjured (statistically no significant, $p > 0.05$) In a multivariate model, none of the intrinsic factors studied increased the risk of injury. **Conclusions:** Our highest injury rate is concentrated in the first trimester, period characterized by high physical military training. Dynamic Balance and Physical fitness cannot explain injuries in our population. A highest cutoff point for admission is unreasonable. Exhausting and prolonged military training, differences between training regimens (e.g. strengthening and speed endurance training in military and sport training) and cumulative number of hours/week of physical activity (Military, sport and/or gym training) could better explain the high incidence of injury in this cohort than intrinsic factors. Neglecting to assess these factors prevents further conclusions; this along with lack of investigation of previous injury history were our weaknesses. Future research should focus in these topics. The prospective design is our greatest strength. **Implications:** Different training regimens should be synchronized in military and sport training; also PT should record hours/week of training to control possible overuse injuries.