WG 4 (Physiological Health)

From Prediction to Early Detection: Insights from Musculoskeletal Injury Analysis in Military Training

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Background:
Musculoskeletal (MSK) overuse injuries notably impact military readiness, with up to 75% affecting the lower extremities, primarily due to repetitive stress from weight-bearing activities. Anterior knee pain (AKP) and exercise-induced leg pain (EILP) affect up to 15% and 35% of army recruits, yet their etiology remains unclear. Diagnosis relies heavily on medical history, clinical evaluation, and exclusion of other conditions.
Purpose:
This research aims to enhance military readiness by improving the diagnosis and prevention of knee and leg MSK overuse injuries.
Methods:
A retrospective study at the Combatant Health Center analyzed knee and leg overuse injuries in 7,611 soldiers, assessing physical, anthropometric, gait, and postural factors, with six-month follow-up on injury incidence and risk associations.
Results:
Among 4,002 soldiers, AKP (14.3%, n=573) and EILP (10.5%, n=421) were highly prevalent during training, significantly linked to reduced performance, altered postural sway, and higher pain scores, straining military healthcare. Logistic regression identified predictors for AKP, including weight (OR=0.99, p=0.032) and grip strength differences (OR=1.03, p=0.042), and for EILP, bilateral anterior-posterior sway (OR=0.61, p=0.003) and bilateral medial-lateral sway (OR=1.82, p=0.004). However, the models explained only 0.6% and 1.0% of the variance.
Conclusions:
This study highlights the high prevalence of knee and leg injuries among soldiers, affecting a quarter of participants and posing significant medical and operational challenges. These injuries were associated with performance deficits, pain, and alterations in gait and balance. However, the predictive models demonstrated limited reliability, suggesting that additional, unexamined factors contribute to injury risk.

WG 4 (Physiological Health)

Management of MSK Injuries – Paradigm Shift in the IDF: Establishment of a Dedicated MSK Clinic

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Background:
Musculoskeletal (MSK) injuries are common in the Israel Defense Forces (IDF), which places a significant burden on orthopedic clinics. However, most MSK injuries do not require consultation with an orthopedic surgeon, which can lead to excessive referrals for imaging, medications and more. To address these challenges, IDF Medical Corps has established a MSK clinic as an alternative to orthopedic clinics in order to provide more precise and higher-quality medical care for cases that do not require consultation with an orthopedic surgeon. This clinic is staffed by physiotherapists with specialized training and extended authorizations.
Purpose:
To compare the effectiveness of the MSK clinic with orthopedic clinics.
Methods:
We compared the number of sick-days, imaging referrals, medication recommendations, activity-limitation-days, and satisfaction survey between the general orthopedic clinic and the MSK clinic by examining the medical records of 450 and 297 sessions, respectively.
Results:
The referral rate for imaging was 36% in the general orthopedic clinic and 3% in the MSK clinic. The recommendation rate for medication was 29% and 3% respectively. The average sick-days were 0.93 days per visit and 0.03 days per visit, respectively, and the average activity-limitation-days were 6.67 days per visit and 1.65 days per visit, respectively. The satisfaction survey showed satisfaction rate regarding the factors attitude (73% and 76%), professional (57% and 76%) and recommendation (69% and 72%) between general orthopedic clinic and MSK clinic respectively.
Conclusions:
Musculoskeletal clinics enable higher operational readiness and cost savings for the IDF, as well as better medical service for its servicemen.