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The Relationship between Aerobic Test Performance and Musculoskeletal Injuries in Police Trainees

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Background and aims

Police officers are required to perform physically demanding tasks as part of their occupational duties.

To prepare officers for these duties, new trainees must complete police officer training. However, this training can lead to injuries and employment failure.

The aim of this study was to determine the relationships between initial aerobic performance assessments and injury risk during police training to inform recruitment and return-to-training protocols.

Methods

- Retrospective data from 219 police trainees undergoing a 12-week police training program.
- The Bond University Human Research Ethics Committee approved this archival data study (RO1898).
- Aerobic fitness data collected 1st week of training included:
  - 20-m Multistage Fitness Test (MSFT) and
  - 30-15 Intermittent Fitness Test (IFT) scores collected during the first week of training.
- Injury data were collected as part of departmental procedures.
- Correlation analyses were used to determine the relationship between the two fitness assessments and between fitness scores and injury rates, with alpha set at 0.05, a priori.

Less aerobically fit police trainees at greater risk of injury.

Police trainees who achieve lower results on a 20-m Shuttle Run or 30-15 Intermittent Fitness Test are more likely to be injured during training.

The 20-m Shuttle Run and 30-15 Intermittent Fitness Test can be substituted for each other as a measure of aerobic fitness.

Results

The mean MSFT score for recruits who suffered an injury was significantly lower (t [108.19]=4.617, p<0.01) than for those who were not injured:

- Not injured = 65.60±16.25 shuttles
- Injured = 55.05±14.20 shuttles

The mean IFT score of injured recruits was significantly lower (t[115.19]=5.25, p=0.001) than that for non-injured recruits.

- Not injured = Level 16.89±1.71
- Injured = Level 15.68±1.41

Spearman's correlation analysis revealed a significant negative correlation between levels of fitness and rates of injury.

- MSFT rs=-0.292, p<0.001
- IFT rs=- 0.315, p<0.001

A Pearson's correlation showed a strong correlation between MSFT and IFT scores (r=0.877, p<0.001).

Conclusion

Police recruits with lower aerobic fitness levels at training commencement, measured by either the MSFT or IFT, were at a higher risk of injury than those with higher levels of fitness over the duration of a recruit training program.

Implications

These findings indicate that aerobic performance assessments may be used by law enforcement agencies to estimate relative risks of injury among trainees and by physiotherapists in ensuring trainees are fit enough to return-to-training following injury.

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