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A comparison of 20mSRT scores and time loss due to injury for the first six months of training at Australian Defence Force Academy from 1999 to 2000[2]

by

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This study investigated the relationship between initial 20 metre shuttle run test (20mSRT) and time loss due to injury. We found an association between low 20mSRT scores, as conducted on arrival at ADFA, and subsequent risk of time loss due to injury, though the sample size studied was small. Fitness, as measured by 20mSRT, may be an important and modifiable risk factor for time loss due to injury. Persons below a certain fitness standard, as measured by 20mSRT, maybe at excessive risk of injury during basic military training.

Introduction

The Australian Defence Force Academy (ADFA) is a military training institution for Australian Navy midshipmen, Army and Air Force officer cadets. It provides university education to future military officers, combined with basic military training. This education and training period usually lasts for three years, and is followed by further service-specific training. Entry to ADFA is based on suitability for a future career as an officer, as well as the ability to achieve academic goals. There are currently no physical fitness criteria for exclusion from entry to ADFA, though all potential cadets are medically screened for illness prior to selection. For the last few years, on arrival at ADFA, data on basic tests of fitness of cadets has been collected. These tests have included the 20mSRT.

A significant number of cadets fail to complete their training at ADFA. This may be due to academic failure, injury, or failure of an assessment as to their suitability as an officer. In particular, until recently, cadets were required to be able to pass an Academy Fitness Test, based on current service fitness requirements, prior to graduation from ADFA. Some cadets fail to pass this fitness test at any time during the three years of their training at ADFA. Such cadets are often unable to go on to service specific training and may not return useful service after their education. Injury was found to be a significant cause of lost training time, and was an important factor contributing to failure to pass fitness standards required for graduation.

Pope *et al*. [1] conducted an investigation into the association between 20mSRT score and risk of injury and failure to recover from injury at Australian Army Recruit Training Centre (ARTC) at Kapooka. 1317 male Australian Army recruits undergoing 12 weeks of intensive training were assessed using a 20mSRT. A strong negative association between 20mSRT score and risk of attrition and a positive association between sustaining a lower limb injury and risk of attrition was found. Recruits who scored 6 or less (low fitness) on the 20mSRT were five times more likely to sustain injury than recruits who scored 11 or more (high fitness). Fit subjects with an injury were 25 times more likely to recover from their injury and complete training successfully than less fit subjects with an injury. The results of this study led to modification of training, and adoption of minimum fitness standards for enlistment based on 20mSRT score. Estimated cost savings of $95.2 million were achieved over a four-year period.[2]

From January to June this year, 44 female first-year cadets at ADFA were noted to have required extensive time of restricted duties due to injury. In five months of training, these 44 individuals accumulated 1234 days of restricted duties due to injury or illness. ADFA requested an investigation to assess this group and to explain why this group had sustained such a high incidence of time loss. ADFA also asked for recommendations as to what could be done to assist these individuals to recover, and to prevent injuries in training at ADFA in the future.

Methods

The ADFA occupational health and safety officer reviewed the ADFA medical advice cards (similar to a PM 101, which is a letter military doctors use to describe medical restrictions) of the 36 individuals in question. The rehabilitation Physical Training Instructor (PTI) also kept data on cadets requiring restrictions from part or all of their physical training and recorded the cause of restrictions. Where required, the medical notes were obtained for clarification of time lost due to injury vs time lost due to illness or a combination of both.

ADFA employees PTIs specifically to train and monitor the fitness of cadets. In recent years, data was collected on fitness test results, including 20mSRT. The PTIs also monitor cadets who have restriction of duty due to injury or illness. Cadets with injury or illness who are unable to complete required training must be medically assessed, and obtain a "chit", or restriction of duties, written on an ADFA medical advice card. Cadets who have restriction of duty due to injury or illness are then not required to complete normal physical training. These cadets on restrictions are given closely supervised physical training programs designed to assist their recovery and maintain fitness. Injured cadets are allocated to a rehabilitation group for supervised training during periods of time allocated for sport or physical training.

This year, the physical fitness of cadets was evaluated using a progressive 20mSRT, as described by the Australian Sports Commission.[3] Cadets were required to run back and forth between two lines spaced 20 metres apart. The initial speed is 8.5 km/hr increasing by 0.5 km/hr at approximately 1-minute intervals, which are labelled stage 1, stage 2 etc. Speed of running is controlled by loud "beeps" from a standardised tape. The 20mSRT score is the time when the subject is unable to keep up with the required speed of running by failing to reach within two strides of the lines on the ground at the time determined by the beeps. This year, cadets were graded as a pass standard if they achieved a 20mSRT score of 7.5, and the cadets were not required to perform beyond this level for their initial assessment. In 1999, the 20mSRT was performed as maximal test cadets were encouraged to continue beyond the level of 7.5 to their best effort.

Results

Results 1. ADFA female cadets 20mSRT scores on initial assessment for years 1999 and 2000, showing the percentage of cadets in each year who achieved a 20mSRT score of 7.5 or higher.

Year	1999	2000
Number of female students	76	44
Medical limitations/ not tested	6	8
20mSRT score less than 7.5	7	25
20mSRT score of 7.5 or higher	63	11
Percentage of cadets achieving 7.5	83%	25%

Results 2. ADFA male cadets 20mSRT scores on initial assessment for years 1999 and 2000, showing percentage of cadets in each year who achieved a 20mSRT score of 7.5 or higher.

Year	1999	2000
Number of male students	215	129
Medical limitations/ not tested	10	7
20mSRT score less than 7.5	2	4
20mSRT score of 7.5 or higher	203	119
Percentage of cadets achieving 7.5	95%	91%

Results 3. ADFA female cadets training days lost to injury or illness during the first 156 days of training, as documented on ADFA medical advice cards for years 1999 and 2000, showing the number of cadets requiring limitations, the total number of days of limitations and the average limitations per cadet.

Year	1999	2000
Number of female students	76	44
Medical limitations	45	36
Number of medical advice cards issued	62	60
Total number of days of restricted duty	989	1243
Average days lost to injury or illness per cadet	13	28

Results 4. ADFA male cadets training days lost to injury or illness during the first 156 days of training, as documented on ADFA medical advice cards for years 1999 and 2000, showing the number of cadets requiring limitations, the total number of days of limitations and the average limitations per cadet.

Year	1999	2000
Number of male students	154	129
Medical limitations	64	56
Number of medical advice cards issued	88	113
Total number of days of restricted duty	635	1204
Average days lost to injury or illness per cadet	4	9

Discussion

This study showed an important difference in the fitness levels of cadets as measured by the 20mSRT. In particular, the year 2000 female cadets were less fit than the year 1999 female cadets, and as a group, the female cadets were less fit than the male cadets.

This study confirmed that a small group of cadets at ADFA had a disproportionately high number of training days lost due to injury or illness when compared to their peers. In particular, this study showed that a small group of female cadets had a much higher number of training days lost to injury or illness than male cadets who were in the same training program during training in both 1999 and 2000. This study showed a relationship between low fitness as measured by the 20mSRT and time loss due to injury.

This study showed an increase in the average days lost to injury or illness per cadet between 1999 and 2000. The number of days lost to injury or illness doubled from the year 1999 to 2000.

Comparison of fitness data and time lost due to injury or illness for ADFA for the first year cadets of 1999 and 2000 showed important differences for both males and females. This was a retrospective study. It was difficult to determine the effect of differences in training requirements and differences in physical training instructors on the time loss due to injury or illness. In the year 1999, the 20mSRT was conducted as a maximal test but in the year 2000, cadets were told they could stop once they achieved a score of 7.5. This may have affected the value of results when comparing one year to another. The role of the medical staff, doctors, nurses, physiotherapists and medical assistants in providing medical restrictions was not controlled. Different medical staff may have used different factors in deciding to provide medical restrictions to cadets. There are no documented protocols to assist medical staff in determining the appropriate provision of medical limitations to cadets. These results may indicate a trend, but further formal studies will be required to accurately determine the association between fitness as measured by a 20mSRT and time loss due to injury or illness at ADFA.

The role of gender and risk of injury

This study showed a disproportionately high incidence of time-loss injuries in female cadets. During military training, where men and women are exposed to the same training load, women have been shown to experience approximately twice the number of injuries as men.[4-6] This is of significant concern at ADFA,

which is a mixed-gender training facility. Should the training and fitness standards for female cadets be reduced or modified in some way to reduce the injury risk to females?
A study of 509 men and 352 women U.S. army trainees during an 8 week basic combat training course confirmed the increased risk of injury for women, but also showed that when the injury rates were adjusted for fitness as measured on a 2 mile run, there was no significant gender difference in injury rates. The authors concluded that run time, as a marker for weight bearing fitness, is particularly relevant to predicting lower limb injuries, which are the most common injuries seen. They also found that women entered training less physically fit relative to their own fitness potential as well as relative to men entering training.[5]

Relative importance of risk factors

To show the importance of selected risk factors, Jones *et al*[4] conducted a study on 391 army trainees, results published in 1993. They showed a higher relative risk of musculoskeletal injuries for women (Table 1). increased risk of time loss injury in men with low and high range body mass index (BMI) measurement (Table 2) and increased risk of time loss injury and stress fracture in slow versus fast runners (Table 3). Interestingly, out of 124 men in this study, no time loss injuries occurred in the men who were in the fastest half of the group on the initial one-mile test, while men in the slower half of this study group had a 29% risk of a time loss injury. Similarly, no stress fractures occurred in the faster men, while the slower men had a 4.8% risk of stress fracture. While the relative risk cannot be determined from the sample size of this study, the trend of less injuries in men who were aster is important.

Type of Injury	Women (n=186)	Men (n=124)	Relative Risk
All	50.5%	27.4%	1.8
Lower Limb	44.6%	20.9%	2.1
Time Loss	30.1%	20.2%	1.5
Stress fracture	12.3%	2.4%	5.1

Table 1. Relative risks of musculoskeletal injury for women compared with men during 8 weeks of combat training.[4]

BMI Quartile	Number	Injury Incidence%	Relative Risk
Q1 Low	31	25.8	2.8
Q2	32	9.4	1.0
Q3	29	13.8	1.4
Q4	31	32.3	3.4

Table 2. Men: Incidence of time loss injuries and relative risks by quartile of measures of BMI. 123 subjects, with mean BMI of 24.3.4

Injury	Any		Lower Body	
Gender	Men	Women	Men	Women
Slow group incidence (%)	34.2	58.9	28.9	54.4
Fast group incidence (%)	12.2	34.7	9.7	30.5
Relative Risk	2.80	1.69	2.97	1.78

Table 3. Men and women: Incidence of time loss injury for slow versus fast runners with relative risks.[4]

Injury	Time Loss		Stress Fracture	
Gender	Men	Women	Men	Women
Slow group incidence (%)	29.0	38.2	4.8	17.6
Fast group incidence (%)	0.0	18.5	0.0	6.9
Relative Risk		2.12		2.54

Table 3. Men and women: Incidence of time loss injury for slow versus fast runners with relative risks.[4]

Modification of risk factors for injury

Injury risk in military training and service may be reduced by investigating for, and identifying, risk factors. Risk factors can be intrinsic or extrinsic.[6] Intrinsic risk factors such as age, gender, race and anatomical variants that lead to an unacceptable risk of injury could be controlled by screening, and exclusion of affected individuals from certain occupations or tasks. Intrinsic factors such as cardiorespiratory fitness, strength and flexibility could be considered as modifiable. Exclusion of selected individuals from high risk activities would reduce the injury rate, however, it may be reasonable to use screening tests to identify at risk individuals and then provide specific training to change their physical fitness. Improving the physical fitness, in particular the fitness as determined by a run or shuttle test should then allow that person to perform their military duties with no significant increased risk of injury.

Modification of extrinsic risk factors, such as unsafe work practices, faulty equipment and training errors is equally important in reducing the injury risk for military personnel. Modification of the workplace can lead to important reductions of injury rates.[7]

Past injury not only increases the chance of an individual being at increased risk of any injury due to the factors already discussed, but also functions as an independent variable to increase the risk of re-injury.[6.8.9] To rehabilitate injured workers and successfully return them to the workplace, a consideration of the future risk of injury should be made, and modifiable risk factors corrected.

Measuring physical fitness

Cardiovascular fitness tests.

- Definition of V02 max. Maximal oxygen uptake (V02 max) is gross oxygen consumption in mL/kg/min. V02 max is accepted as the criterion measure of cardiovascular fitness. It is the product of the maximal cardiac output (L/min) and the arterial-venous oxygen difference (mls oxygen/L) (10). It gives an indication of oxygen extraction from air by the respiratory system, delivery of oxygen to the tissues by the cardiovascular system, and of tissue oxygen extraction and utilisation at the cellular level.
- Direct measurement of V02 max. Direct measurement of V02 max is performed in physiology laboratories. and in this procedure, the subject breathes through a low-resistance valve with nose occluded while pulmonary ventilation and expired fractions of oxygen and carbon dioxide are measured.[10]
- Indirect tests for estimating V02 max. sub-maximal and maximal tests. When direct measurement of V02 max is not feasible, a variety of sub-maximal and maximal indirect tests can be used to estimate V02 max without complex laboratory support. Sub-maximal testing, while reasonably accurate is not as precise as maximal testing. The basic aim of sub maximal testing is to determine the heart rate response to a defined sub-maximal work rate to predict V02 max. Maximal tests determine the workload at the point of volitional fatigue or maximum effort over a defined workload defined by time taken, distance travelled or level of output achieved. These indirect tests have been validated on large numbers of subjects by comparing the test results to directly measured values of V02 max. Examples of indirect tests for V02 max include treadmill tests, cycle ergometer tests, 20mSRT, step tests and field tests. Field tests consist of walking or running a certain distance in a given time. The advantages of field tests are that large numbers of individuals can be tested at one time and little equipment is needed.[10]
- Sub-maximal field testing for estimation of V02 max. The Rockport one-Mile Fitness Walking Test and other walking tests are popular sub-maximal field tests for estimating V02 max. The heart rate is measured in the final minute of the Rockport one-Mile Fitness Walking Test after the subject walks one mile as fast as possible. Taking the heart rate after the completion of the walk tends to overestimate the V02 max as the heart rate decreases with rest. V02 max is calculated from an equation including factors for age, gender, body mass and time to walk one mile. When an individual is given repeated submaximal exercise tests over a period of weeks

or months and the heart rate response to a fixed work rate decreases over time, it is likely that the individual's cardiorespiratory fitness has improved.[10]

- Maximal field testing for estimation of V02 max. Two of the most widely used running tests for assessing cardiorespiratory fitness are the Cooper 12- minute test and the 1.5-Mile Run Test for time. The objective in the 12-minute test is to cover the greatest distance in the allotted time period, and for the 1.5-mile test, it is to run the distance in the shortest period of time. These are both considered maximal tests for estimation of V02 max. An equation for estimation of the V02 max for the 1.5-mile Run Test is V02 max = 3.5 + 483 / (time in minutes).[JO]

Time (min) for 2.4km	20mSRT score	V02max mls/k/min
19:00	4.2	27.0
18:30	5.2	29.0
16:30	5.6	31.5
15:00	6.6	35.0
13:30	7.2	37.0
13:00	7.8	29.0
12:30	8.4	41.0
12:00	8.8	42.5
11:00	9.6	45.0
10.:45	9.11	46.5
10:30	10.4	48.0
10:00	10.8	49.5
9:45	11.4	51.5
9:30	11.10	53.0
9:15	12.4	55.0
9:00	12.10	56.5
8:30	13.4	58.0
8:15	13.10	60.0
7:45	14.10	63.5
7:15	15.8	66.0
7:00	16.2	68.0
6:45	17.2	71.5
6:30	17.12	74.0
6:10	18.12	77.5

Table 4. Time taken to complete the 2.4 km run test, V02 max level and the corresponding 20mSRT score. [3,11]

	Percentile	Men VO2 mls/kg/min	Women VO2 mls/kg/min
Excellent	>85	>57	>40
Above average	65-85	52-56	37-39
Average	45-65	43-51	35-37
Below Average	25-45	40-42	32-34
Poor	<25	<40	<31

Table 5. Population figures for V02 fitness for men and women aged 20-29 (mL/kg/min) based on Canada Fitness Survey, 1981.[12]

Muscular strength tests.

Muscular strength refers to the maximal force that can be generated by a specific muscle or muscle group. It can be measures as a static or a dynamic measurement. The standard of dynamic strength testing is the 1-repetition maximum, the heaviest weight that can be lifted only once using good form.[10]

Muscular strength tests

	Percentile	Men, push-ups	Women, push-ups
Excellent	>85	>36	>30
Above average	65-85	29.35	21-29
Average	45-65	22-28	15-20
Below Average	25-45	17-21	10-14
Poor	<25	<16	<9

Table 6. Population figures for push-ups for men and women aged 20-29, based on Canada Fitness Survey, 1981.[12]

Muscular endurance is the ability of a muscle group to execute repeated contractions over a period of time sufficient to cause muscular fatigue, or to maintain a specific percentage of the maximal voluntary contraction for a prolonged period of time. Simple field tests such as the sit-up test or the maximum number of push-ups that can be performed without rest may be used to evaluate the endurance of the abdominal muscle groups and upper body muscles, respective1ly.[10]

	Percentile	Men, push-ups	Women, push-ups
Excellent	>85	>43	>36
Above average	65-85	37-42	31-35
Average	45-65	33-36	25-30
Below Average	25-45	29-32	21-24
Poor	<25	<28	<20

Table 7. Population figures for sit-ups for men and women aged 20-29, based on Canada Fitness Survey, 1981.[12]

Improving physical fitness

The study results in Table 8 show that while there was an overall improvement in fitness of both male and female trainees, the improvement was more pronounced for the women. In this study, the men exhibited significantly higher entry-level measure of physical fitness, and though the women did not outperform the men by the end of 8 weeks training, the difference was considerably less. Mean end of study 2 mile run times were 14.0 mins for men, and 17.4 mins for women.[5]

Factor	Gender	Improvement (%)
Sit-ups	Female	98
	Male	44
Pushups	Female	156
	Male	54
Aerobic fitness, from VO2 max Calculated from run time	Female	23
	Male	16

Table 8. Improvement in fitness parameters after an 8 week training period for female and male army basic trainees.

The injury risk of training for fitness

Duration (min/day)	No. of participants	Injury incidence %	Change in VO2 max %
Control	18	0	-1
15	22	22	+8.7
30	25	24	+16.1
45	24	54	+16.7

Table 9. Effects of duration of running training in a group of prison inmates on cumulative incidence of injury and aerobic fitness (V02 max) with training frequency and intensity held constant for 20 weeks.[13]

Frequency of training 3 days per week Intensity of training 85 to 90% of maximum heart rate.

Frequency(days/wk))	No. of participants	Injury incidence %	Change in VO2 max %
Control (0)	13	0	-3.0
1	15	0	+8.0
3	25	12	+12.9
5	18	39	+17.4

Table 10. Effects of frequency of running training in a group of prisoners on cumulative incidence of injury and aerobic fitness (V02 max) with duration and intensity held constant over a 20 week training period. [13]

Duration of training 30 minutes per day Intensity of training 85 to 90% of maximum heart rate.
Tables 9 and 10 show that exercise duration and frequency are both important factors in a program designed to maximise improvements to V02 max while minimising injury. The subjects studied in tables 5 and 6 were male prisoners aged 20 to 35 years. Initial V02 max levels were between 41.5 to 45.8 mls/kg.min.[13] Both groups showed a disproportionate increase in injury risk compared to gains in fitness with over training.

Will the modification change the risk
Current research has identified injury as an important problem for the military. There is some similarity in the injury rates and the types of injuries sustained by Australian and United States military personnel. Interestingly, the U.S. Army Physical Fitness Test consisting of tests of cardiorespiratory endurance (2 mile [3.2 km) run times). muscle endurance (push ups and sit-ups) and surrogate measurements for body composition (height and weight) is similar to components of fitness testing performed on Australian personnel.

Current research has also identified risk factors for injury, some of these risk factors appear to be modifiable. Further study is required to show if changing a risk factor would lead to a corresponding reduction in risk of injury.

Generally, research on injury prevention is difficult in the Australian military. Airforce, Army and Navy function independently in relation to fitness testing and medical fitness standards. Statistics are either not kept or not analysed promptly to provide current information. It seems reasonable to use data from US researchers who are better funded and have large populations to analyse. If we accept a role of fitness testing as part of injury prevention, it would be reasonable to standardise our testing, and to use a test that would generate data that has already been shown to correlate with injury risk in another military population.

Conclusion
ADFA is currently re-evaluating the fitness standards to be applied on entry and during the three years of training. At ARTC Kapooka, persons with a 20mSRf score of less than 7.5 are excluded from entry for training. A 20mSRT score of 7.5 is equivalent to a V02 max of 38 mls/kg/min, or a 2.4km run time of approximately 13:15 (3,11). This has resulted in significant reductions in injury rates, attrition and cost. There is little doubt that similar standards, if applied at ADFA, would have similar benefits. The training requirements at these two Australian training institutions are quite different. Kapooka has a limited time to achieve a high standard of training towards a career

as a soldier in infantry. ADFA has a much longer time to train cadets in the role of officers in many different specialised areas. If the standards of Kapooka were applied at ADFA, many of the current cadets would be excluded on the basis of the 20mSRT score on entry. This standard would not take into account the differing time restraints and intentions of training at ADFA and Kapooka.

All ADFA graduates are required to meet fitness test standards specific to their service on employment as officers. The minimum expectation on graduation should therefore be the ability to pass the fitness standards that will be required on employment.

Service	Gender	Push-ups	Flexed arm hang	Sit ups
Army (1)	Male	50	(5)	75 (6)
	Female	25		75
Airforce (2)	Male	(4)	30	30 (7)
	Female		30	30
Navy (3)	Male	25	25	25
	Female	10	25	25

Service	Gender	2.4 km run time	5km walk time	500m swim time
Army (1)	Male	10.48	(8)	(9)
	Female	12.27		
Airforce (2)	Male	12.00	40.00	
	Female	13.00	41.00	
Navy (3)	Male	13.00	42.00	12.30
	Female	15.00	43.00	13.30

Table 11. A comparison of service fitness test requirements for the Australian Defence Force.[14]

Notes:

1. Standards for Army personnel under 21 years old.
2. Standards for Air Force personnel under 35 years old.
3. Standards for Navy personnel under 35 years old. Navy personnel can choose one of push-ups or flexed arm hang, and one of run, walk or swim.
4. No push-up test for Air Force.
5. No flexed arm hangs for Army.
6. Sit-ups with feet held for Army.
7. Sit-ups with feet not held for Air Force and Navy.
8. No 5 km walk for Army personnel under 41 years old.
9. No 500m swim test for Army or Air Force.

Table 8 "Improvement in fitness parameters after an 8-week training period for female and male army basic trainees" shows the improvement that could be expected with training. It may be reasonable to accept cadets at a lower standard on entry so long as the percentage improvement required within each parameter is achievable within a reasonable time. ADFA has both the time and resources to train cadets to meet these standards.

Service	Gender	Push ups	Flexed arm hang	Sit ups
Army (1)	Male	33	(5)	52 (6)
	Female	10		38
Airforce (2)	Male	(4)		21(7)
	Female			15
Navy (3)	Male	16		17

	Female	4		13

Service	**Gender**	**2.4 km run time**	**5km walk time**	**500m swim time**
Army (1)	Male	12.45	(10)	(10)
	Female	16.00		
Airforce (2)	Male	13.30		
	Female	16.30		
Navy (3)	Male	15.45		
	Female	18.30		

Table 12. Recommended mm1mum entry standards for ADFA based on current service fitness test requirements and adjusted for expected improvement with eight weeks training. Adjustment of 2.4 km run time, correlating predicted improvement in V02 max to predicted improvement in run time. [5.11.14]

Number on entry =number required x 100/(100 +percentage improvement) Percentage improvement after an 8 week training period, from table 8.

Notes:

10. No data available to adjust flexed arm hang, 5 km walk or 500 m swim for improvement with training.

These are the minimum fitness standards on entry that could be expected to improve to the required standards with training. Persons below these minimum levels should be considered at unacceptable risk of injury during training and unlikely to achieve acceptable standards. Accepting persons at or near these minimum standards would also result in a high rate of injury and attrition during training.

Recommendations:

1. ADFA conduct screening tests of physical fitness prior to commencement of training.
2. Exclusion of persons unable to attain the reduced fitness standards prior to entry, as outlined in Table 8, as unsuitable for training, on the basis of risk of injury, risk of attrition and risk of not being physically capable of attaining the standards of service specific fitness tests.
3. Identification of persons of low standards of physical fitness and provision of special training for these individuals to improve their physical fitness in the shortest possible time with the least risk of injury.
4. Identification of high-risk activities through review of past medical data, with modification of such activities, or delay in exposure of cadets to such activities until a reasonable and safe fitness standard is demonstrated.
5. Retesting at 8 weeks and 20 weeks after commencement of training, and then at six monthly intervals to validate the effectiveness of interventions and expected reduction of injuries, while continuing to identify individuals in need of training assistance.
6. Comprehensive rehabilitation for injured cadets to be conducted in normal work hours with the aim of efficient return to full fitness or early identification of persons unsuitable for continuation of training.

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