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## **The effect of 12 weeks basic malaysian commando training on physical characteristics of successful commando candidates**

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### **Abstract**

This research was undertaken to determine the physical characteristics among successful soldiers participating in the Basic Commando Course series 1/AK 2014 for 12 weeks, at Sungai Udang Camp, Malacca. A total of 37 male soldiers who had passed the commando practice test were selected to participate in this research, with special approval from the Malaysian Armed Forces Training Base. The anthropometric data of the body and fitness levels, were taken before, during and after the entire duration of the training. The successful commando candidates (commando trainees) aged  $22.3 \pm 2.85$  years, with a mean height of  $1.71 \pm 0.03$  m, mean weight of  $60.76 \pm 5.18$  kg, mean BMI of  $22.02 \pm 1.38$  kg/m<sup>2</sup>, and mean waist circumference of  $68.92 \pm 2.48$  cm. All physical fitness parameters showed a decrease in the level of physical fitness from the beginning to the end of the study period. In conclusion, the Malaysian commando selection training for twelve weeks produced a significant negative impact on the level of fitness of the military personnel involved. These study findings demonstrate the need for a specific recovery program after the commando's training session, for the welfare of members and to ensure that the physical preparedness of the trainees has returned back to its pre-training maximum level.

**Keywords:** Physical Fitness, Commando, Training Program

### **INTRODUCTION**

The word commando was from the Portuguese language, which simply means 'command'. As a result of frequent contact between the Afrikaner and Portuguese settlers in Africa, the term 'Kommando' became well known (Dobbie & Elliott, 1944). "Commandos" are Special Forces troopers prepared to lead novel and hazardous or secretive tasks, similar to prisoner salvages, hostile activities, outside inside resistance, and counterterrorism missions with the utilization of unique specialized and strategic strategies and techniques (Holcomb, McMullin, Pearse, Caruso, Wade, Oetjen-Gerdes & Butler, 2007). A commando trainee is set up to withstand unforgiving physical, mental, psychosocial and diverse natural difficulties, which request exorbitant scopes of substantial and professional wellness (Carlson & Jaenen, 2012; Martin, Grier, Canham-Chervak, Anderson, Bushman & DeGroot 2016). Commando wellness incorporates high courage and quality execution, high inspiration, weakness obstruction, and survivability. Along these lines, a chose instruction application upheld wellness and tolerance preparation has been produced for the commando learners (Martin et al. 2016).

The goal of the 12 weeks of Malaysian Army Commando training is to maintain or reach the physical performance level required for deployment standards or more demanding occupational

requirements as a commando. In commando training, nutrition, total training load, and recovery were typically planned individually to optimize training adaptations and to minimize training-related injuries and overtraining. All Commandos receive the same program and experience the same field conditions in their training. (Kyröläinen, Pihlainen, Vaara & Ojanen Santtila, 2017), which is more demanding than those for elite athletes. It includes strenuous physical activity and periods without sleeping (Aharony, Milgrom, Wolf, Barzilay, Applbaum, Shindel, Finestone & Liram, 2008; Sporiš, Harasin, Baić, Krstičević, Krakan, Milanović & Bagarić-Krakan, 2012). Such training generates high levels of stress to simulate combat conditions (Lieberman, Bathalon, Falco, Kramer, Morgan & Niro, 2005), with candidates kept physically active for 16–22 hours a day (Sporiš, et al., 2012).

The Tactical Strength, Conditioning or Physical Toughness primary purpose was to develop the operational fitness for military personnel. The operators must consider the physical demands of the operational related activities when developing specific comprehensive strength and conditioning programs. Throughout history, soldiers and warriors were physically trained by performing various strengths and conditioning exercises, which then, this had evolved eventually into athletic events.

Physical training was conducted by military units to improve combat readiness. Aerobic capacity and muscle strength are the keys to readiness, while endurance training and resistance training would develop these abilities (Vickers, Hodgdon & Beckett, 2009). Thus, it was obvious that appropriately designed physical training could enhance effective military task performance. However, military physical training is subject to time, budget and equipment constraints (Vickers, Hodgdon & Beckett 2008; Vickers, et al., 2009). Military physical training must also promote non-physical outcomes such as self-confidence and mental toughness.

The first aspect that ought to be incorporated into military contextual fitness is the physical training, which is deemed critical for the success of the soldiers and cadets. Physical fitness is considered a basic skill necessary for military personnel to perform mission tasks effectively. Various study reports (U.S. Army, 1998; Drystad, Miller & Hallen, 2007), indicated that soldiers who scored well in the Army Physical Fitness Test (APFT) also had high functioning psychological skills, critical to high-level performance in the field. As with any form of physical activity, physical training requires motivation, focus, effort, and a considerable amount of discipline. Physical training sessions help to prepare the soldiers and cadets for the physical rigors of military operations and combat. These rigors often include cognitive, social, and physical skills that are implemented under high stress (Ward, Farrow, Harns & Williams, 2008).

From the journals, there is no ranking of Malaysian commandos. The fact, that there was no research and evaluation or assessment done on Malaysian commandos. To be successful in the commando basic training program, what kind of physical characteristics and physical fitness are needed? No one knows the current characteristics of the successful candidates. How or in what aspects does the commando training course affect the successful candidates? These questions remain unanswered. Thus, the purpose of this study was to know the effect of basic Malaysian commando training of 12 weeks on physical of successful commando candidates, so that, this research will be invaluable in providing an insight into the efficacy of the training that is affecting the individual soldier.

## **METHODS AND MATERIALS**

### **Experimental Approach to the Problem**

This research was a quantitative experimental study. The results was depend on the measurements instituted on the commando trainee's on physical and fitness profile after 12-week Basic Commando Course.

### **Subjects**

Initial samples of 104 commando trainees were given questionnaires for their demography status. Subsequently, 88 of the commando trainees who completed the camp training phase were again tested. Physical fitness test were done inclusive of the commando trainees who are not included in the initial

samples. All commando trainees who qualify in subsequent phases, jungle, swamp, sea, and escape and evacuation were tested. After the jungle and the long march only 47 commando trainees succeeded to continue the course. After the swamp phase, only 45 qualified to continue. One of the trainee commandos was caught outside the scheduled training territory and another one has developed leg swelling (edema). Subsequently, only 44 of them qualified for the prestigious “Green Beret,” and becomes a commando. Thirty-seven (all male) of the commando trainees were analyzed from the start of the training until the end of the training. Seven of the 44 commando trainees were not included during the initial samples of the survey.

## **Procedures**

Data collection for the physical aspects (push-ups, sit-ups, pull-ups and rope climbing) were done before the training, after the camp training phase, and at the end of the course.

Push up was tested to measure the endurance of the arms and shoulder girdle of the commando trainees. For the push-up protocol, the push-up was done on the floor, tattered road or at the flat ground. With the knees bent at right angles and the hands on the floor directly under the shoulders, the performer lowers the body to the floor until the chest touches and then pushes back to the starting position. The commando trainees did the push-ups as many repetitions as possible without rest. The body must not sag but maintain a straight line throughout the trial. Scoring was terminated if the performer stops to rest.

Sit-ups were tested to measure the strength of the abdominal muscles and trunk flexors. Protocol for sit-ups were executed with knees flexed, heels 12 to 18 in. from the opposite shoulders. The subject curls up to a sitting position touching the elbows to the thighs and then returns to the down position until the mid-back makes contact with the testing surface. The arms must remain in contact with the testing surface throughout the exercise. The number of correct sit-ups done in 1 minute is the score.

Pull-ups were tested to measure the muscular endurance of the arms and shoulder girdle in pulling the body upward. A horizontal bar 1½ in. in diameter, rose to a height so that the tallest performer cannot touch the ground from the hanging position. The performer assumes the hanging position with the overhand grasp (palms forward) and pulls the body upwards till the chin is over the bar. With every pull-up, the future commando will return to a totally extended hanging position. The exercise ought to be continual as repeatedly as doable. The score is that the range of completed pull-ups.

Rope climbing was tested to check the handle, higher limb strength, abdominal or body part muscles, and lower limb strength. The rope climbing was done, wherever the rope arranged to hang at a plank below the roof of the Commando’s Hanger or Batutu Camp field close to the seashore inside the neck of the woods of the commando camp. The tip of the rope was roughly three feet higher than the bottom. The partner would signal for the beginning of the check employing a whistle with the time noted. The tested candidate can reach up and grasped the rope with one hand directly to a lower sample population, which are the commando trainees.

## **Data and statistical analyses**

Repeated Measure ANOVA was used to compare physical characteristic and muscular endurance characteristics during pre and post training of 12-weeks Basic Commando Course.

## RESULTS AND DISCUSSION

**Table 1.** Mean physical characteristics and body composition of the commando trainees during Pre-training, Camp Phase, Swamp Phase, and Post-training

	Pre Training (N=104)	Camp Phase (N=88)	Swamp Phase (N=44)	Post Training (N=44)
Weight (Kg)	59.25±6.02	58.49±5.22	56.00±4.48	60.76±5.12
BMI (kg/m <sup>2</sup> )	21.42±1.75	21.12±1.81	20.22±1.51	20.60±0.90
Waist Circumference (cm)	74.81±4.01	68.26±3.21	65.70±2.84	68.92±2.48

All the above data on table 1 were taken before the start of the training, at the end of camp training phase, towards the end of the swamp phase, and immediately after finishing the Basic Commando Course.

**Table 2.** Basic anthropometric profile of the successful Malaysian commando candidates (N=37)

	(N)	Minimum	Maximum	Mean±S.D.
Age (years)	37	19	35	22.3±2.85
Weight (Kg)	37	51.30	71.90	60.12±4.67
Height (cm)	37	1.65	1.78	1.71±0.03
BMI (kg/m <sup>2</sup> )	37	18.0	22.80	20.60±0.90
Waist Circumference (cm)	37	65.70	74.81	68.92±2.48

Table 2. showed basic anthropometric parameters of the commando trainees and changes in body composition during the 12-week Basic Commando Course

**Table 3.** The muscular endurance characteristics of successful Malaysian commando trainees based on the push-up, sit-up and pull-up counts and the rope climbing test

Variables	Mean±S.D				% sig. difference
	Pre-Training (N=104)	During Training (N = 44)	Post-Training (N = 44)		
Push-ups (repetitions)	64.30±14.34	59.92±14.11	55.73±17.67		0.01
Range (min-max)	35 – 120	45 – 105	15 -61		
Sit-ups (repetitions)	45.24±7.64	42.67±5.95	53.14±13.68		0.01
Range (min-max)	35 -67	30 – 55	27 – 50		
Pull-ups (repetitions)	12.97±2.40	12.11±3.37	11.84±2.20		0.00
Range (min-max)	7 – 35	7 – 25	3 – 21		
Rope Climbing (secs)	13.63±2.39	14.18±3.15	14.98±2.46		0.01
Range (min-max)	10 – 22	9 – 24	15 – 51		

Table 3 showed there are significant differences ( $p=0.01$ ) between post-training push-ups ( $55.73\pm17.67$ ) and pre-training push-ups ( $64.30\pm14.34$ ). There are significant differences ( $p=0.01$ ) between post-training sit-ups ( $53.14\pm13.68$ ) and pre-training sit-ups ( $45.24\pm7.64$ ). There are significant differences ( $p=0.00$ ) between pre-training pull-ups ( $12.97\pm2.40$ ) and post-training pull-ups ( $11.84\pm2.20$ ,  $p=0.00$ ). Lastly, the result of pre-training ( $13.63\pm2.39$ ) and post-training rope climbing showed a slight decrease in ( $14.98\pm2.46$ ,  $p=0.01$ ).

## CONCLUSIONS

A short period of underfeeding, at the Jungle Phase of training, has had detrimental effects on the physiological responses to exercise. There would be an increase in the heart rate during aerobic work and a decline in the commando trainees' orthostatic tolerance. There were declines in recovery and accompanied by symptoms of muscle soreness, weakness, and fatigue after the duration of physical work hampered by energy deficit (Montain & Young, 2003).

Energy deficit following a 6% body weight loss would reduce muscle strength (similar to the study findings for our commando trainees), with increasingly poorer performance upon additional body mass loss. Although the effects of underfeeding on muscle power are not very well-defined, obvious reductions were seen in anaerobic performance (rope climbing, sit-ups, push-ups, and pull-ups), which could be most likely due to muscle weakness rather than short-term dietary effects. On the other hand, the capacity to generate maximal aerobic power seems to be more responsive to underfeeding, whereby body mass loss of as little as 1-1.5% can reduce the maximal aerobic power capacity markedly. Changes in the maximal aerobic capacity are at least, partly correlated to body water loss, i.e. dehydration state. Short-term energy restriction seems to cause depletion in the aerobic capacity, with possible detrimental impacts on physical performance (Consolazio, 1983).

The Malaysian army commando trainee's number of push-ups deteriorated by 6.81% during training and 13.33% at the end of the training. The candidate's sit-ups were reduced by 5.68% during training but improved by 17.46% at the end of the training. The increment might be due to increased will power, less back pain, and knowing that they were eligible for the green-beret. The pull-ups also show decreased in performance during training by 6.65% and further decreased by 8.71% after the end of the training. The researcher also found out that the speed of rope climbing decreases by 4.04% and 9.90% after the end of the course. From the above results conclude that pull-ups, push-ups, and rope climbing involves the muscles and movement of the upper and lower limb. Whereby, the sit-ups involved only the abdominal muscles/back muscles. The lower limb muscles were not involved as being fixed by the partner commando by holding the legs at the ankles. Thus, there will be less energy involvement.

The above findings concur with the findings of the research done before. Military maneuvers with prolonged physical exercise induce a negative energy balance due to smaller energy intake than expenditure. The influence of fasting on the metabolic changes and physical performance have been studied excessively before. It appears that short-term fasting (1-3 days) reduce physical performance and modifies the metabolic response to exercise. Liver glycogen is rapidly depleted as starvation extends beyond 18-24 hours and, by the process of lipolysis; the most abundant fuel supply in the form of body fat becomes available to the fasted individual during prolonged subnormal exercise. This decrease in muscle and liver glycogen stores and hypoglycemia seem to be the cause of fatigue.

The physical characteristics of the commando trainees of the Malaysian Army are as follows: Mean heights of  $1.71 \pm 0.03$  m, mean weights of  $60.76 \pm 5.18$  kg, mean BMI of  $22.02 \pm 1.38$ , and mean waist circumference of  $68.92 \pm 2.48$  cm. The physical characteristics were similar to the Asian commandos but slightly lesser than the British marine, Australian, and U.S. Special Forces. The physical fitness components of pull-ups, sit-ups, and pull-ups were at par or better compared with the world's best commandos, whereby, in rope-climbing, we are among the world's best. The important criteria were not the physical characteristics, but being tough-minded, physically strong, and emotionally stable during stressful conditions. For further study, it was recommend to assessed the the mental toughness of Malaysian future commando.

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