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Effectiveness of Classification Measures in Predicting Achievement in the Israel Defense Forces – Fitness Instruction Trainers Courses as a Case Study

Abstract: *Human resources are the most crucial element in the selection of suitable fitness instruction trainers (FIT) and the results of the screening process impact greatly on the entire physical training system in the Israeli army, both in the short-term and the long-term (potential officers, young officers and developing and veteran officers). The aim of the current study is to examine the effectiveness, validity and reliability of the screening process for acceptance to the female fitness instructors training course in the Israel Defense Forces (IDF). The screening process aims to identify those that are most suitable from a large pool of candidates, in order to ensure the highest possible level of candidates and the lowest possible drop-out rate from the training course and subsequent army service. The paper examines the reliability of the classification exam currently administered in the course and its validity in predicting those candidates who will succeed in the course and in their assignments afterwards. The sample is based on a data analysis of nine screening dates over three years (three each year). The evaluation of validity is based on the relationship between the course entrance exam grades (administered a year before enlistment), exam grades at the beginning of the course and additional data relating to success in the field.*

Keywords *human resources, Israel Defense Forces*

I. Introduction

Human resources are the most crucial element in the selection of suitable fitness instruction trainers (FIT), and the results of the screening process impact greatly on the entire physical training system in the army. This is evidenced both in the short-term (in the FIT courses and on the bases where the trainers serve) and in the long-term (potential officers, young officers and developing and veteran officers) (Galily, 2007).

This paper examines the validity of the screening process of female candidates for fitness instructor training courses. The goal of the screening process that this paper presents is to identify from a large pool of candidates those most suitable to serve as fitness trainers, with the aim of raising the level of trainers and lowering the drop-out rate both during the course and the subsequent army service.

2. Background

The human element is dynamic and essential to an organization's success. Its contribution is based on the qualities and talents that each individual brings to the organization. Most organizations mainly recruit workers whose personal characteristics and worldview are as close as possible to that of the organization, in order to satisfy the individual's expectations in the work environment and increase his/her productivity and level of functioning. In other words, it is preferable to be classified as "suitable to pilot's course" than to come under the category of "the best become pilots" (Vigoda, 2000; Drory and Vigoda-Gadot, 2010; Vigoda-Gadot and Talmud, 2010).

The effort to recruit talented highly capable workers is central to human resources departments. Complex systems of sorting and screening human resources are developed in the hope of finding the best match for the organization – someone who is talented, educated, possesses initiative and independent thinking, is willing to work hard to further the collective goals of the organization and who will suit the organization, its values and its general corporate culture (Vigoda, 2000). However when the demands of the workplace are higher than the supply of suitable candidates, then screening standards tend to be lowered (Kantrowitz and Winnigert, 2000). Compromises of this sort are common in institutes of higher education throughout the world. In accepting students to academic studies the main emphasis is put on the candidate's ability to succeed academically, while when considering candidates for teaching positions this ability is not sufficient, for in order to be a good teacher one needs such characteristics as self-expression, self-confidence, good

inter-personal relations, leadership and flexibility. Acceptance criteria at most teaching colleges are: matriculation average, results of a psychometric exam and an interview with the acceptance committee (Teichman-Weinberg & Ben-Ari, 2001).

People differ from one another in almost every way. Some things are easy to see and measure, like height and weight, and others, such as skills, intelligence and motivation, cannot be directly observed and are often difficult to measure. Psychologists from the school of individual differences hold that individuals differ in their behavioral and cognitive characteristics to the same extent as they differ in physical characteristics. They also maintain that characteristics are fairly constant over time, and because of this can be measured. It is not possible to measure psychological characteristics directly, but rather through their expression in behavior or verbal reports. There are two ways to match a person to a job on the basis of measuring individual differences: job-centered screening and person-centered screening. The first starts with a defined job, and the goal is to find the best person to fill the position, while the latter starts with a specific person and tries to match him or her to the job for which he or she is most suited (Howell and Dipboye, 1986).

There has been much research on the subject of effective screening in predicting success, for example in sports (Lidor *et al.*, 1996), in the army Barko and Shirom, 1980; Tubiana and Ben-Shakhar, 1987), in teaching (Bloom *et al.*, 1976), teaching studies (Goldberg and Halabi, 1999) and studies in general (Kennet-Cohen *et al.*, 1999).

Personnel selection

The screening process tests performance in situations similar to those that the prospective candidates will be required to handle in their future positions, and also appraises aspects of personality and behavior. Goldberg and Halabi (1999) researched the effectiveness of screening systems in conjunction with instruments that examined cognitive ability and personality traits. The findings show that screening systems which include an assessment center can contribute to correctly predicting success both in academic as well as professional pursuits. A particularly high prediction correlation was found among female students who received a low score from the assessment center. These students received lower grades in their studies compared with other students. In a similar study that checked the prediction ability of the Achva Teachers College acceptance committee (Teichman-Weinberg and Ben-Ami, 2001), it was found there was no correlation between the evaluation of the students' abilities and their subsequent achievements in their studies. In response to these findings a study was conducted among those lecturers who had been on the acceptance committees, and it was found that the prediction failure was most likely due to

an absence of instruments for sufficient knowledge. Another study, conducted at the Gordon Teachers College (Shectman, 1990), found a high correlation between the acceptance committees' evaluation and subsequent grades. This high correlation was attributed to prior training that the evaluators received. Berry and Houston (1993) found higher prediction reliability when evaluators held discussions among themselves than when each worked independently.

Lidor *et al.* (1996) examined the connection between the achievements of young basketball players in a series of tests of motor skills and the opinions of two expert coaches on the general abilities of the young players. The findings showed that it was possible to identify, choose and sort the level of the athletes on the basis of the motor skills tests.

In a study that checked the effectiveness of the classification of a sample of 126 men in the United States Navy (Marcinik *et al.*, 1995 see also Allsopp *et al.* 2003), the results showed low prediction ability for the demands and tasks of submarine duty. A significant number of those who passed the admissions tests were not able to complete on-the-job tasks, especially because the tests did not relate to physical effort, specific groups of muscles and movements necessary to execute the tasks. The admissions tests included 500 yards swimming (14 minutes), push-ups (42 in two minutes), sit-ups (50 in two minutes), chin-ups (six with unlimited time), and a 1.5 mile run (12 minutes, 45 seconds). These were assessed against a battery of on-the-job tests that included carrying a 10 kilogram bag of tools for 60 meters, dolphin kicks for remaining afloat, climbing a four-meter ladder and carrying oxygen canisters for 137 meters. The results showed a clear difference only between those who passed or failed the push-ups and sit-ups in the dolphin kicking ($0.05 > p$), and some of those who passed the screening tests were unable to carry a tool bag (18.5%) or execute the dolphin kicks (25.7%).

Screening process for combat troops in the Israel Defense Forces (IDF)

As stated, this article examines the screening process for female soldiers who wish to be combat fitness instruction trainers (FIT) and to be accepted to the FIT course. The screening process aims at identifying the most suitable prospects from a large pool of candidates. Additional aims are choosing the highest quality candidates and lowering the drop-out rate both from the course and their subsequent service.

The first step in designing an effective screening model is an analysis of the position that needs to be filled (Anastasi, 1964), and then building a screening process that meets the desired profile.^[1] In a job analysis conducted in the IDF combat fitness department, it was determined that female fitness instruction trainers face many challenges, including instructional, organizational and educational ones. Upon completion of the FIT course and placement in various

bases their primary responsibilities are to be fitness trainers and to give lectures to new recruits, field sergeants, officers and headquarters soldiers. As such it is her job to habitualize them to physical activity, both for their military jobs as well as their general health and well-being. In addition, she is responsible for preparing lesson plans and training programs, for the supervision and follow-up of the programs and soldiers' achievements, as well as for organizing sports days and tests in accordance with the orders regarding number and content of training sessions for each population.

Previous studies conducted by the IDF combat fitness department^[2] found that the essential skills required for success as a fitness instruction trainer include: professionalism, methodological capabilities, ability to learn and implement, showing respect for professional authority and organizational and command ability. Other necessary outstanding traits are self-confidence, assertiveness, inter-personal relations, motivation and investing effort, ambition, open-mindedness, ability to accept criticism, ability to integrate socially and ability to withstand pressure both academically and on the job. In addition, the job of the fitness instruction trainer demands values such as: credibility and honesty, recognition of the importance of training and personal responsibility. In the screening process assessment of these values and traits are left to the interpretation of the assessors.

The initial stage of the screening process, which is not part of the screening process researched for this paper, takes place prior to enlistment day, when potential candidates for the FIT course are identified. At the same time potential officers are also identified. This process is based on the results of psychometric exams, medical examinations and the draftees' preferences. In every recruitment cycle there is a fixed number of possible candidates from each category/quality group (KABA). After this the FIT course professional^[3] screening process is divided into four stages: 1) test of basic physical fitness 2) group dynamics exercises 3) personal interview 4) completion of a form evaluating the candidate's traits and a decision on acceptance to the course.

The goal of the screening process is to successfully predict the level of the candidates' preparedness for the FIT course, in order to ensure their success in the course and subsequent work in the field. The candidates who prior to enlisting have passed the initial screening process are sent to a two week basic training, at the end of which it is determined if they will do the twelve week FIT course.

The FIT course includes theoretical material, practical training and development of training skills in preparation for work in the field. At the end of the course the women are integrated into different units throughout the country in accordance with their knowledge, abilities and personal preferences.

In the course of their service they will undergo basic physical fitness exams every six months, and attend two professional courses with written final exams. It should be noted that the women have the option of leaving this job assignment at any stage in their service.

In the wake of changes in the job definition of army fitness trainers, in 1994 changes were made in the structure of the FIT courses and the screening process was adjusted. The goal was to institute a uniform screening process that would maximize the FIT candidates' potential. In 1998 a committee was convened in the organizational department of the combat fitness department responsible for the screening process for FIT courses, which examined the previous process, and consulted with officers and trainers to establish a clearer profile of the desired trainer. The committee members then consulted with people in the IDF department of behavioral sciences to develop the screening process used today.

The opinions and recommendations of the committee were implemented in 1998. The main changes to the screening process were: 1) the creation of clear and structured instruments on which the selector could base his or her recommendations; 2) an annual training day for reservists who serve on the screening committees; 3) The requirement that all reservists serving on screening committees would be former fitness trainers or officers of fitness trainers, or former officers or combat soldiers who have received training from an commanding officer of a FIT course as well as training by the head of the screening; and 4) every screening team must include at least one veteran FIT officer and one reservist.

Despite the systematic planning of the screening procedures, there has been no examination as to whether they do in fact effectively predict achievement in the FIT course and in the field. Accordingly, the goal of this research were to examine the components of the existing screening test their effectiveness, reliability and validity.

This study was divided into two parts: the main part examined the effectiveness in predicting success in the FIT course by comparing achievements on the screening exams (both theoretical and practical) to achievements in the course (theoretical, practical and instructional) and in the course of their service afterwards as trainers (including evaluation reports from their commanding officers in addition to the theoretical and practical exams). The research sample is based on an analysis of data from nine screening dates over three years (three each year). In addition, the reliability between the evaluators was tested during the screening process regarding the grade components and the evaluation of the relevant attributes for the job, based on the analysis of the job, the validity of the type of research tool, the classification profile of

those going on to be officers and the effectiveness of the classification means in predicting the training job after the FIT course (including theoretical and practical exams and the assessment of a commanding officer's assessment).

The screening process for acceptance to FIT courses is based on an assessment center. ^[4]An assessment center is defined as "a comprehensive, standardized procedure in which multiple assessment techniques such as situational exercises and job simulation are used to evaluate individual employees for a variety of manpower decisions" (Thornton and Byham, 1982). At the heart of the assessment center is the role-playing of situations that the candidate would have to deal with on the job. The origin of the term "assessment center" comes from the fact that a group of assessors and assessees come together with the goal of assessing the candidates' potential, promotion or placement in a specific job (Landy and Trumbo, 1980).

The battery of tests in the IDF consists for the most part of group dynamics, simulations, personal interviews and a biographical questionnaire, in order to identify the talents, personality traits and values of the candidate. This screening process is applicable to a wide range of jobs. ^[5] A fitness instructor in addition needs to be physically fit. The validity of the assessment center in predicting success in administrative positions is 0.36 (Casio, 1991). The different tests **[?]** are also more relevant than pencil and paper tests (Landy and Trumbo, 1980). The screening process for FIT courses is composed of four stages: a test of basic physical fitness, group dynamics exercises, personal interview with completion of an assessment form of the candidate's personality traits and a decision of acceptance/rejection to the course.

The physical fitness exam assesses basic physical fitness, includes aerobics and tolerance of the muscles of the hands and stomach, which is significant measure of suitability for the job of fitness instruction trainer. Recent research conducted in combat units found that physical fitness was a predictor of long-term physical ability and was closely related to motivation and unit suitability (Bitterman, 1995). A similar study was conducted in another combat unit and showed that the most highly linked test grade in the screening process to grade at the end of training was the test of physical ability (0.4) (Tzafi, 2000).

Simulation tests seek to replicate the kinds of situations that appear in the field and that candidates will have to deal with in their future jobs. There are two kinds of situation tests: individual exercises where a candidate is questioned alone and group exercises in which a group of candidates are evaluated on how they perform together. Situation tests must be suited and relevant to the job according to the job analysis and express the central activities of the job. The main drawback of situation tests is the exposure to assessors' bias (the halo effect, first impressions and stereotypes) and environmental bias (Anastasi, 1990).

The biographical questionnaire provides a structured framework for the interviewer and acts as a basis for his or her questions. It includes questions about personal background, education, employment, hobbies, personal aspirations and self-image. Many studies have shown biographical information to be a good predictor of job success (e.g., Guion, 1965; Wallace, 1965; Owens, 1976) and some found that the main contributing factors to achievement are heredity and environment (e.g., Jencks, 1972; Bloom *et al.*, 1976). Nevo (1977) also cites biographical questionnaires as effective predictors of success in studies and the army.

In the current screening framework the biographical questionnaire is used as an aid to the personal interview. The interview is conducted to gather information pertaining to the candidate's suitability to a specific job. Responsibility for administering the interview lies with the interviewer through an exchange of information, impressions and opinions between the interviewer and interviewee. Regarding validity, the opinion in the literature is divided. A few studies found reliability and validity in personal interviews (Hunter and Hunter, 1984; Schmitt *et al.*, 1984; Herriot, 1989). Other studies published a number of more positive reports on the contribution of the interview (Mayfield, 1964; Schwab, 1969; Wright, 1969; Harris, 1989). The interview is one of the most important components in IDF screening procedures, and is found to be a valid predictor of many criteria (Reave, 1969); there are almost no screening procedures that don't include an interview (Ben-Shachar and Beller, 1993). In a study conducted by Tubiana and Ben-Shakhar (1982) that focused on screening interviews used in the IDF, there was a medium-high correlation among the background variables of the interviewees (education, Hebrew knowledge and intelligence) that were used as predictors alongside the interview.

Research on the predictive validity of the screening process for combat units against the criteria of success in the unit found that none of the predictors (team building, sociometric and interview) had a clear predictive validity, not even the final weighted nominal grade. An analysis of the reliability of the team building and the interview found reliability coefficients low and medium, respectively (Beeri and Nahum, 1998). Other studies that were conducted in combat units found the prediction formula predicted with definitive correlation to the unit and for command ($R=0$ for unit, and $R= 0.34$ for command). The interview was valid and contributed mainly to predicting leadership and thinking ability (Bitterman, 1995). The screening exams were not able to predict training course dropouts (Tzafi, 2000). A similar army study on the ability of screening tests to predict success on the job reported reliability between evaluators with a coefficient of 0.3 on the interview and 0.4 on tests in the field.

Population of the current study

Four hundred and fifty-one women with no army experience who demonstrated potential were candidates for the army FIT course. After being identified by the personnel department of the military general staff, they were invited, presented themselves, and passed a set of screening tests and took the entrance exam for the FIT course.^[6] There was no uniform experience in instruction or education among them except that they were from the same cohort. This study examined the effectiveness of classification measures in predicting the achievements of candidates in the IDF FIT course, on the basis of the correlation between achievements during the screening process and those in the actual course. In addition, the classification profile of those women who left for officer training was checked, as was the effectiveness of the classification measures in predicting success as trainers after the FIT course.

All information regarding test results prior to the course and achievements during the course and subsequent army service was taken from the soldiers' personal files.^[7] These data are documented and preserved at every stage of army service. Evaluation reports by the commanding officers were gathered from individual forms filled out by each soldier's commanding officer.

3. Research methods

The research was divided into two main parts. The first part examined the reliability among the evaluators during the screening on the suitability grade component and the evaluation of relevant traits for the job, as determined by the job analysis and structural validity of the research instruments. The second and main part assessed the effectiveness of the classification measures in predicting the candidates' achievements in the FIT course on the basis of the relationship between achievements in the screening process and in the course. The screening profile of those women who left to become officers was checked to determine the effectiveness of the classification measures in predicting success in instruction jobs after FIT course.

Analysis

The statistic analysis was preformed by SPSS software.^[8] The level of accuracy that was determined for assumption test is $P < 0.01$ $P < 0.05$.

1) Testing the hypothesis regarding the reliability of the evaluators in the classification, the teams and the distributions of the successful and unsuccessful categories, is based on the "agreement rate" and the "disagreement rate" in percentages between the other teams in the final grade and every attribute separately. The agreement rate was evaluated in an

additional experiment and evaluated in two manners: in a seven-level scale between the first team and each of the three other teams by a Tau factor of Kendall. In addition, the evaluation was sorted into three categories, and despite the use of the 7 level scale, acceptance and rejection was based on the narrow definition of more than only three categories, as follows: First category: final grade 1-4, a weak candidate and unsuitable; second category: final grade 5, a borderline candidate; third category: final grade 6-7, a suitable candidate. In addition, the option of dividing the evaluation into two categories was evaluated: First category: final grade 1-5, the candidate is unsuitable; second category: final grade 6-7, the candidate is suitable. These compatibilities were tested by the KAPPA for targeting the cut according to the points that state acceptance or non-acceptance to the course.

- 2) The hypothesis regarding the connection between screening components was checked using a Pearson correlation. In this process the relation between the final screening grade and the sub-evaluations of the different traits of the examinee was evaluated, between the final course grade and between its components and between general evaluation of on the job performance and the components of the evaluation questionnaire. Validity of the structure was also examined using factor analysis, in order to attempt to identify the main aspects of the team evaluations and the fitness officers.
- 3) The correlation between the predictive variables in the screening tests and the success variables in the FIT course was examined using a Pearson correlation between the physical fitness exam during the screening and the same exam administered at the start of the FIT course separately, and afterwards, between the screening variables and the course variables. In addition, a comparison was made between the screening averages and the course averages using the t-test for paired variables.
- 4) A comparison of the screening profiles of the course dropouts with those who completed the course was conducted using the t-test regarding each of the test variables. The relationship between predictive variables on the screening tests and predicted variables during command and instruction after the course were examined using the Spearman correlation for profitable variables and Kendall's Tau coefficient for placement variables. The correlation between the forecast variables in the FIT course and the forecasted variables during subsequent performance after the course was examined in the same manner.
- 5) In order to evaluate the potential of the screening test in predicting who will be accepted for officer training a comparison of the profiles of those who went to officers training to those who stayed in the FIT course was conducted using t-tests for each profile component.

4. Findings

Quality of the tests used for prediction and success

Regarding the consistency of the different teams in the screening assessments the degree of agreement among the team that checked all the examinees and the other teams was $K=0.498$ for those candidates that received a grade of 6 or higher in contrast to those who received 5 or lower and $K=0.448$ in dividing into three categories, where 5 was a separate category. The degree of agreement on the whole range of results (1-7) was $t=0.586$. The degree of agreement between the teams on the sub-evaluations according to categories is clear but low-medium ($K=0.207 - 0.5104$, $p<0.05$). The rate of agreement between the teams regarding acceptance or rejection was partial. The rate of agreement between one team and all the other teams was 76.3%. However, this rate was different regarding each of the other three teams; the highest rate of agreement was between teams one and four (100%), a high rate of agreement was found between teams one and three (85.7%), and the lowest rate of agreement was found between teams one and two (54.3%).

On the question of the validity of the structure of the questionnaire used to summarize assessments at the end of the screening day, clear correlations were found, with most of them high (0.905 – 0.647) between each sub-evaluation. A factor analysis found that most of the difference (81%) can be explained by one general factor. All of the components had a high communality (accepts authority) of 0.661 and higher. There was a high correlation between this measure and the final evaluation of the candidates ($p=0.951$, $p<0.01$).

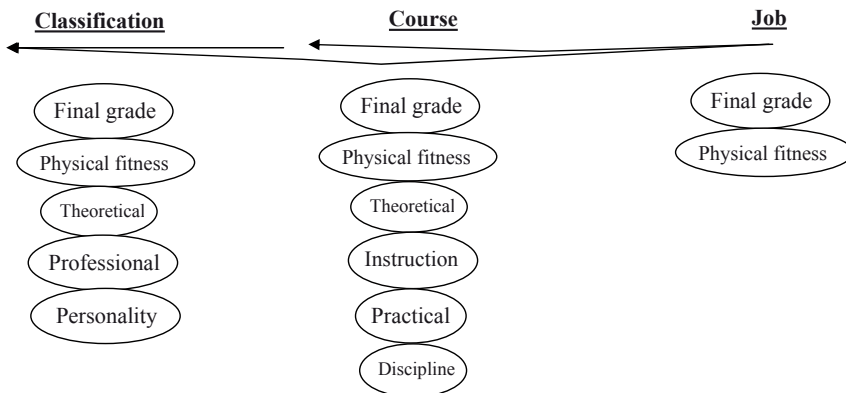
On the question of validity of the structure of the components of the final grade in the FIT course, there was a low correlation. A factor analysis of these components found that only a relatively small part of the difference (38.7%) can be explained by one general factor. The theoretical and practical grades had communalities of 0.59 and 0.50. Likewise, there was a low to medium correlation ($r=0.694 - 0.153$, $p<0.01$) between the final grade in the course and its components.

On the question of validity of the structure of the evaluation questionnaire completed on the job after the course there were clear correlations, mostly medium ($r=0.730 - 0.407$) except for two (0.382 and 0.296). Factor analysis found that after rotation, two factors together explain 70% of the common difference for each sub-evaluation. The first, which accounts for 40.8% of the difference, includes evaluation of the following measures: professional, thorough, level-headed, independent and responsible. The second, which accounts for an additional 30.7% of the difference, includes: disciplined, trustworthy and cooperative. Loyalty and personal example were medium load factors in both

measures. In addition, there were clear and medium correlations between the final grade and the opinion ($r=0.641 - 0.500, p<0.01$) for the measure 1 grade (0.64), whose evaluation includes professional measure, and measure 2 (0.50), whose evaluation includes a personality measure.

Therefore, data analysis of the evaluation questionnaire that summarizes the screening will subsequently be based only on the final grade, data analysis of the course grades will be based on all the components and data analysis of the opinion questionnaire on job performance will be based on only two measures. The model for evaluating predictive validity appears in Figure 1 below.

Figure 1. Flow chart of the variables in assessing the data in the current research



Prediction validity of screening test on success in FIT course

Correlations were examined between the results of the physical fitness test administered during the screening process and results of the same test administered at the beginning of the course, between the predictive variables on the screening tests (the basic physical fitness test, the personal traits grade and the final grade) and the success variables in the FIT course (grades on the practical, theoretical and instruction tests and the final weighted course grade). On the comparison between the two physical fitness exams it was found that only 84% of those who arrived to to take the course passed the entrance test, only 59.3% of those who passed the test had passed it during the screening process, and the other 24.8% had failed the test during the screening process but were given a second chance. Of the 15.9% who failed the entrance test 9.8% had also failed it during the screening process and 6.2% passed it during

the screening process but failed it during the entrance test. A clear medium correlation was found between the grade on the fitness test during screening and the fitness test in the course and the final grade (0.621). The components were: running (0.504) and tolerance of the stomach muscles (0.445). A low but clear correlation was found in the hands muscle tolerance component (0.291).

In reviewing of the differences between the averages significant changes were found in the level of physical fitness from the screening test to the test at the beginning of the course. It was found that grades improved, with differences in the stomach (average improvement of 5.44 sit-ups), hands (average improvement 5.15) and the final grade (2.3 points). There were no clear differences in the running times between the two test dates. Most of the clear correlations between the data from the screening and the final grade in the course were low including the average practical grade. The connection between the components of the theoretical tests, discipline and instruction were low and not clear. There was a medium connection between the grade in the physical fitness test in the course and the overall physical fitness grade in the screening, and low connections from 0.5 with other components of physical fitness or the final screening grade. In checking the differences in the averages of those whose final evaluation was different in the screening, it was found that those with a final grade of 5 and 7 had differences only in the physical fitness test at the beginning (difference of 5.66 points) and end (difference of 4.99 points) of the course. Differences were not always found between final grades 6 and 7, or between final grades 5 and 6. In the grade on the practical component, the average grade of those in category 7 were higher than those in the other two categories.

Profile comparisons between those who finished the FIT course successfully and those who were dismissed or quit during the course, based on the classification tests

In the comparisons of averages of the screening variables between those who finished and those who quit the FIT course, it was found that the fitness test is the variable that differentiated those who finished from those who didn't. In addition, clear but lower differences were found between those who finished the course and those who had already failed it in the opening exam on the stomach muscle tolerance and in the final classification grade.

Prediction validity of screening test and FIT course on success in instruction jobs after finishing the course

In examining the correlations between predictive variables in the screening tests and forecast variables on the job instructing after the course, a clear but low correlation was found between overall physical ability on the job and scores

on overall physical fitness (0.321) and running (0.281) in the screening. No clear correlations were found between predictive variables in the screening and the measures of opinion evaluation or the on the job theoretical grade.

When examining the correlations between success variables in the FIT course with forecast variables on the job after the course, the strength of the connections, even the clearest of them, was found to be very low, with the exception of three medium correlations between the theoretical grades (0.332), between the final grades on the physical fitness test (0.479) and between the achievements in running (0.532). No clear correlations were found between the physical fitness variables in the course and the measures of opinion and theoretical grades on the job. Clear and low correlations were found between the measure of personality on the opinion and the theoretical grade (0.188), and between the instruction grade (0.164) and the final grade (0.178) in the course. The measure of professionalism had a clear low correlation only with the discipline grade (0.182) and the final grade (0.136) in the course, and the final grade in the opinion was found to have a clear low correlation with all the course grades except the practical grade.

Screening and course profile of those who became officers relative those who did not become officers

There was a normal distribution to the screening variables. However, due to the small sample for which data were available (only 5 of the 15 went to officers' training), it was not possible to check if the screening predicted who would become an officer.

A comparison of the FIT course averages of the 15 soldiers who went on to officers' training with the rest of the 351 who remained in the FIT course found that the officers were clearly better than the rest in the following: entrance test grade [?] (4.82 points), final test grade [?] (6.79), theoretical grade (6.35 points), practical grade (7.51), instruction grade (3.45 points) and final course grade (5.29 points). There were no clear differences in the discipline grade.

5. Discussion

Quality of the tests used for prediction and success

The findings show that agreement on the final grade was higher when the evaluation range was divided into two categories rather than three or seven. In a similar study that was conducted to predict physical fitness of security personnel (Halfon, 2003), a higher degree of objectivity was found among the evaluators judging combat skills (0.889 – 0.883). Lower values (0.41) were found in a study conducted in an elite army unit on measures of performance in

team building (Tzafi, 2000). It is easier for the screening team and the decision makers to use only two categories, where 1=unsuitable and 2=suitable. Some evidence points to the need to improve the training of the screening teams. Findings showed medium agreement in candidate evaluation on the final grade (0.498) and lower values on the sub-evaluations. It would appear that despite the significant changes in the screening? initiation? process that were put into effect starting in 1998, the agreement among the screening teams in this study was not high, and there may be room for improvement and clarification of the screening process to achieve unification of the critical elements in the candidates skills essential to these tests. In other words, in addition to training days for the reservists that include detailed lectures regarding the screening process and the necessary evaluation methods, it is recommended to hold an additional preliminary meeting on the morning of each screening day to draw conclusions and review the relevant emphasis for that day. A higher reliability coefficient was found when evaluators held discussions among themselves (Berry and Houston, 1993), and therefore it would be worthwhile to continue to hold discussions among the evaluators on the screening teams. In addition, it is recommended to occasionally check the success of the teams, especially those comprised of reservists, in predicting success in the course and on the job, in order to draw systematic conclusions. The screening process needs, on the one hand, to be as comfortable, simple, short and as inexpensive as possible, while on the other hand, it should be as effective in prediction as possible (Wallace, 1965). Research has shown that evaluators have a limited ability to process evaluative information, and the more complex the evaluation task is the greater the cognitive bias, therefore the number of evaluation measures should be kept to a minimum (Nevo and Cohen, 1998).

The study found a medium to high correlation (0.905 – 0.670) between the sub-evaluations on the summary evaluation questionnaire. Anatasi (1990) states that the main drawbacks of situation tests are evaluator bias (halo effect, first impressions, stereotypes), and situation bias, and perhaps the main factor for these findings is the “halo effect”, especially since the evaluator fills out the form only at the end of the screening day. The main difference (81%) was found in one general factor which explains the difference in all the sub-components.

In another study conducted in an elite military unit (Tzafi, 2000) a similar questionnaire was used, which included: technical ability, work under pressure, effort, leadership, team work, learning ability, ability to improvise, physical strength, adaptation to new situations and trustworthiness. The strength of the correlations were 0.01 – 0.83, with the highest correlation found between “working under pressure” and “adaptation to new situations” (0.83) and between “effort” and “team work” (0.82). The central recommendations that

emerged from those findings led to simplifying the questionnaire. In this study it may be that using a single grade would have made the evaluation process simpler. However, it should be considered that these findings were probably the result of teams that weren't sufficiently professional in examining the sub-measures, and instead relied on their general impression of the candidate's personality regarding these aspects without having the ability to make the fine distinctions between the sub-evaluations. The last stage before filling out the summary evaluation questionnaire at the end of screening process is the personal interview (semi-structured) with each candidate. From the evidence collected on the screening days it appears that the evaluators did not always follow this important instruction, which in turn hurt the screening process. Therefore, it is recommended that each file include a set form with detailed questions for the structured part of the interview. It would appear from studies that the more sophisticated and complex the position that an employee aspires to, the better he or she will succeed in instruction and work. Therefore it is recommended to add to the questionnaire a measure of how important the candidate sees the job and how much he or she wants to devote his or her army service to training (on a rating scale).

In checking the validity of the structure of the final grade in the FIT course this study found low correlations, but with clear distinctions between the different components. A small part of the difference was found in one factor (38.7%), and a high correlation (0.839) was found between this factor (the theoretical grade) and the final course grade. In other words, the final grade summarizes this measure. In checking effective job performance prediction there are two different types of criteria that should be considered when determining validity; success in acquiring the necessary knowledge to perform the job and level of actual job performance (Ghiselli, 1956). Examining these criteria requires instruments of validity where the final grade reflects the talents and traits relevant to the job. And though the unique part of the four measures is great their expression in values of communality is relatively low. The significance of this is that each of the components of the grade has a substantial portion of unique difference, and therefore they should be evaluated separately.

A structure validity check of the opinion questionnaire during the instruction period after the course showed medium correlations (0.730 – 0.296) between the questionnaire's components. These findings are similar to those of a previous study in an elite army unit (Tzafi, 2000) with a similar questionnaire which include the following evaluations: leadership, team work, motivation, trustworthiness, ability to work under pressure, adaptability, physical ability, professionalism and suitability to the unit. The correlations ranged from 0.05 to 0.71 where the highest correlation was between adaptability and ability to

work under pressure. Factor analysis found two central measures that together accounted for 70% of the explained differences. One included the evaluations: professionalism, thoroughness, level-headedness, independent, responsible, dedicated, and sets a personal example which describe mainly professional aspects. The second included the evaluations: disciplined, trustworthy, cooperative, dedicated and sets a personal example which describe mainly aspects of personality. Therefore one can rely on these two measures to reflect the main differences that characterize the ten items. One can conclude from this that the officers' evaluation of the instructors was based mainly on the two dimensions of professionalism and personality. The medium correlations (0.500 and 0.641) that were found between the measure of professionalism and the measure of personality to the final grade on the opinion questionnaire indicate that the final grade on the opinion report reflects the weighing of two measures.

Prediction validity of the screening test on success in the FIT course

Candidates for the FIT course take the same basic physical fitness test twice: once on the screening day and then again, months later, on the first day of the course. There is only low to medium correlation between the results of the two tests, leading to the conclusion that the physical fitness test is not a very good predictor of who will succeed in the course.

A significant number of those who passed the fitness exam on the screening day failed it on the first day of the course. Conversely, a considerable number of those who failed the exam on the screening day passed it on the first day of the course. In addition, there was improvement in the strength components at the start of the course in comparison to the screening day. Bitterman (1995) reports that the physical fitness exam is an important screening tool and predicts physical ability over time, and is closely related to motivation and suitability to the unit. Studies by Lidor *et al.* (1996) found that it is possible to identify, choose and sort athletes on the basis of the results on tests of motor skills. In this study the partial connection and the significant improvement point to the conclusion that it is possible to only partially predict the physical status of the candidates at the start of the course, and then justifies giving candidates who show potential and have high values and are close to the necessary fitness level the opportunity to practice and to re-take the fitness exam at the start of the course. At the end of the screening day, each candidate receives information regarding the importance of passing the entrance exam to the course. A survey of the literature of combat units found that the highest correlation between different screening tests and the final training grade was the measure of physical ability 0.4 (Tzafi, 2000), and that physical fitness test predicts long-term physical ability and is closely connected to motivation and suitability to

the unit (Bitterman, 1995). The findings of this chapter point to the need to place a far greater emphasis on improving achievement prior to the course and even to provide the candidates with personal training programs, giving special attention to those candidates whose grades on the physical fitness test were borderline. This would utilize the months between the screening date and start of the FIT course.

As stated, the main goal of this study was to assess the predictive validity of the screening process for success in the FIT course. There was no significant connection between achievement in the screening tests and grades in theory, practice or discipline in the course. In other words the data from the screening tests predict only the component of physical fitness and the final grade in the course, and even this only partially as seen in the low correlations. Casio (1991) found that the validity of assessment centers in predicting success in mainly administrative positions was about 0.36. The FIT course receives candidates whose final grade in the screening was 7 (highly suitable) and 6 (suitable), and on rare occasions 5 (borderline). From these findings it can be seen that there is no difference between the final screening grades of 5, 6 and 7, and that the highest evaluation of 7 is higher than 5 and 6, but between them the differences are slight. Despite this, in instruction and discipline there were no differences. As was already stated, the first stage in building a job screening framework is job analysis (Anastasi, 1964), then in accordance with the desired profile, designing a screening process. It would appear that this screening process needs additional tests with a higher prediction ability regarding instruction and discipline. According to Bloom *et al.* (1976), a teaching candidate's entrance data have the most influence on achievement and success. But these data did not show significant differences in predicting success in the course, except slightly in physical fitness. Nonetheless, when the evaluating team gave the final screening grade, the difference between grades 5, 6 and 7 was very significant. Similar results were found in Bitterman's (1995) research, which identified the physical fitness test as the greatest contributor to predicting success, in contrast to the other predictors (team building, interview, psychometric), and Tzafi's (2000) research found that physical ability alone had a predictive ability close to that of the entire screening process. In other words, it is certainly possible that the differences between the grades of the candidates who passed the screening were biased by the evaluators' knowledge of their grades on the physical fitness test. In any event, the findings are similar to those found in a survey of the literature conducted by Goldenberg **[or Goldberg?]** and Halabi (1999), according to which there has yet to be found a skills set that can predict success in teaching.

A comparison between those who successfully completed the FIT course and those who were rejected or dropped out based on screening tests

The purpose of the comparison is to determine to what extent the entrance profile to the FIT course can contribute to distinguishing between those who were rejected from or dropped out during the course and the information based on the entrance screening test. The findings show that the final screening grade predicts failure on entering the FIT course. In terms of screening profile, the course dropouts are differentiated from those who finish mainly by their grades on the running component and general physical fitness, but also by the final grade and results of the sit-ups. In a similar study conducted on a security unit (Halfon, 2003), all the averages of the physical fitness components of the group that did not finish training were lower than the averages of the group that finished, and most had been selected to the correct group (72%). Goldberg and Halabi's (1999) research found that the screening framework that includes an assessment center contributes to predicting success both in theoretical studies and practical internships especially in regards to students who received low grades in suitability at the assessment center. On the other hand, Tzafi's (2000) study of an elite combat unit, which included a psychometric exam, field tests and an interview, found that screening tests did not successfully predict drop-out during training. It would appear that the physical fitness component is a significant component in establishing distinctions between different groups.

The goal is not just to draft, choose and assign the best possible trainers, but to increase their quality and reduce the percentage of dropouts during the course and subsequent service, with the lowest possible investment of time and budget. Therefore, in accordance with the results of this research, it would appear that there is justification that the physical fitness component should be the central motif in determining the final screening grade.

Prediction validity of the screening process and the FIT course on success as a fitness instruction trainer after the course

A clear but low correlation was found between overall physical ability as a trainer and screening grades in overall physical ability (0.321) and running (0.281). This research did not find any connection between the screening final grade and the measures of the opinion report and theory grade on the job. Goldberg and Halabi (1999) found a similar clear but low relationship between the assessment center final grade for acceptance to teacher training and subsequent field work – student teaching (0.36), and the grade in the academic course (0.33). Similar research conducted in another academic institution (Teichman-Weinberg and Ben-Ari, 2001), where the acceptance committee did not receive appropriate guidelines, found no connection between the

committee's evaluations and the students' achievements. Higher values were found in research conducted by Braco and Shrum (1980) in the army between work in the field and the final grade of the preparatory stage (0.31), and between the grade in the preparatory stage on professional ability (0.39), and in Tzafi's (2000) research where correlations ranged from 0.02 to 0.41. The lowest correlations were found between the screening field tests and technical ability and trustworthiness, and the highest and clearest were with physical ability (0.41), learning ability (0.36), leadership (0.33) and ability to improvise (0.31). A high correlation was found (0.71) between the final screening grade and the final evaluation at the end of the course. A previous study conducted with a different military unit found low correlations (0.04 – 0.25) between the on the job opinion evaluation and the final screening grade and between the physical fitness test in the screening (0.02 – 0.30) (Bitterman, 1995). It may be concluded that this screening test is a limited predictor of job success.

From an examination of the relationships between the success variables in the FIT course and the predicted variables during the training job after the course, it was found that the strength of the clear connections was for the most part low, with the exception of three medium ones (theory, running and final physical fitness grade), which indicates a close connection between physical fitness and theoretical knowledge in the course and on the job. It can be seen from these findings that the course grades, and particularly the final course grade, predicts job success. It is interesting to note that physical fitness in the course, which has a connection to physical fitness on the job, has no connection to the job evaluation: measures of personality on the evaluation were found to have low correlation with the theoretical grade, the instruction grade and the final course grade; the measure of professionalism had a low correlation only with the grade in discipline and the final evaluation grade had a clear low correlation with all the course grades except the practical grade. It would appear that the professional officers did not connect either physical fitness or professionalism to their evaluations of the fitness instruction trainers.

A comparison of screening and course profile of those who were promoted to be officers with those who were not

There was a normal distribution to the screening variables. However, due to the small amount of data regarding those who proceeded to officers' training (on only 5 of the 15 who went), it is not possible to check if the screening predicted becoming an officer.

In terms of course profile, those who went to officers' training differed from the others on every grade component in the FIT course, with the exception of discipline. There is no documentation in the literature of this sort of assessment in a military organization.

6. Conclusions

The main findings of this research show that the degree of agreement among the evaluators regarding final screening grades is medium and above, but is higher when the evaluation range is two categories instead of three or seven. Likewise, the structure validity of the research instruments for making predictions is medium and higher when: the evaluation questionnaire at the end of the screening is based only on the final grade, the components of the FIT course grade have unique differences and therefore justify evaluating them separately and the evaluation/opinion questionnaire in the course of on the job instruction after the FIT course is based mainly on two measures – professionalism and personality. The data on the screening tests predict only the physical fitness component and the final course grade, and that only partially.

The findings show that:

1. The final screening grade predicts failure to enter the FIT course. In terms of the screening profile, the dropouts are distinguished by the running component and the grade on general physical fitness, but also on the final grade on sit-ups.
2. The screening test is limited in predicting the level of physical fitness on the job as opposed to the course grades, and especially the final course grade which predicts success on the job.
3. Physical fitness in the course, which is found to be connected to physical fitness on the job, has no correlation to the on-the-job evaluation. Due to the small amount of screening data on those who left for officers' training, it is not possible to determine if the screening process predicts acceptance to **[OK?]** officer training.
4. Those who went to officers' training are distinguished from those who did not on all of the components of the grade in the FIT course, excluding the discipline grade. The components of the FIT course grade (excluding the discipline component) can be relied on in determining who will go to officers' training.

Recommendations based on the research findings

1. Shorten the summary evaluation questionnaire by setting only a final grade by reducing the scale assessments from 1-7 to 1-2 where 1=unsuitable and 2=suitable.
2. Reduce the job evaluation questionnaire from 10 to two measures, and use it periodically mainly to monitor the training sequence. Continue to allow candidates with potential who have high assessments, and who are close to the required level of physical fitness, to practice and to take the physical

fitness exam again at the start of the course, since most of them have a chance of meeting the acceptance requirements. At the end of the screening day it is necessary to place much greater emphasis on the need to improve achievements in preparation for the course, and even to equip **[provide ?]** the candidates with a personal training program, with special attention paid to those candidates with borderline grades in physical fitness. In this way the months between the screening and the course will be put to effective use. Continue to relate to the physical fitness component as the central element in determining the final selection grade.

It is important to remember that candidates that received low grades in the screening were not checked and therefore it is not possible to deduce from these findings about candidates who received grades of 1-4 though it is very probable that they would have had less success.

Additional recommendations based on relevant literature in the research field

1. It is important to insist that the “half-structured” interview be implemented. In addition to study days for reservists that includes a detailed lecture on the screening process and the required work methods and assessments, it is recommended to have an additional meeting on the morning of each selection day for drawing conclusions and reviewing the relevant emphasis for that day. In addition, it is recommended that periodic checks be conducted on the success of the teams, especially those comprised of reservists, in predicting success in the course and on the job, in order to draw systematic conclusions. The degree of agreement between the different screening teams in this study was not high, and there is room to sharpen and improve the process the critical components of the candidates’ skills that are essential to these tests.
2. While this topic was not examined, but in keeping with the many findings that point to assessor’s bias in light of grades on the physical fitness screening test, it would be worth considering the possibility of keeping these grades confidential. Discussions among the assessors on the screening team should be continued.
3. It is recommended to add the following question to the summary evaluation questionnaire: “How important is this job in your eyes and how willing are you to spend your military service as an instructor?” (On a numerical scale).
4. It is recommended to check the possibility of adding additional instruction elements to the screening process.
5. It is recommended to check the reasons for the low correlation between the physical fitness exam and the job evaluation.

6. When there is a large enough database, it is recommended to check if the screening process predicts officer's training.

These recommendations may improve the screening process and are definitely worthy of future systematic examination, regarding both success in the course and success in the job.

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