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**A FLEET VALIDATION OF SELECTION TESTS FOR  
UNDERWATER DEMOLITION TEAM TRAINING**

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**July 1957**

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## SUMMARY

### A. PROBLEM

In a previous study, a battery of predictor tests was administered to 140 students entering Underwater Demolition Team (UDT) training. Of the entering group, 64 were graduated into fleet teams. Approximately 15 months after graduation of the last of this group, the present follow up was performed to determine the relationship between this predictor battery and fleet success.

### B. PROCEDURE

Forced rankings were obtained for 50 of the original 64 graduates on a number of traits important for fleet success. Correlations were obtained between scores on the original predictor battery and forced rankings on "over-all operating ability." Swimming scores were correlated with rankings on "swimming ability." Other traits were too highly correlated with the first criterion to warrant separate analysis.

### C. RESULTS

Basic Test Battery (BTB) scores were significantly correlated with fleet success, while swimming and physical fitness measures were not. Two personality traits, Objectivity and Masculinity, had significant validities against this fleet criterion. Swimming test scores correlated significantly with rankings of swimming ability in the fleet.

### D. CONCLUSIONS

Swimming ability and physical fitness are important as predictors of UDT training success, but not of fleet success. Cognitive measures, (BTB), while unproductive of UDT training success, predict fleet success. Therefore, both types of measures should be used for screening in the initial UDT training program.

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## A FLEET VALIDATION OF SELECTION TESTS FOR UNDERWATER DEMOLITION TEAM TRAINING

### A. BACKGROUND

In a study reported earlier (2), a battery of predictor tests was administered to 140 students entering Underwater Demolition Team (UDT) training. Of this entering group, 76 failed the training program and 64 passed. Scores on the predictor tests were validated against a pass-fail criterion, and swimming and physical fitness tests were found to have substantial predictive validity. (See Table 1.)

In this initial training program, attrition was largely attributable to the individual's inability to swim sufficiently well or his lack of sufficient stamina to survive the highly paced program. The man who was out of condition did not have time to condition himself within the program itself; the weak swimmer was unable to sharpen his swimming skills rapidly under adverse conditions of surf and water temperature.

In fleet operations, on the other hand, the graduate "frogman" now is an adequate swimmer and has sufficient stamina to perform the rigorous duties that the frogman has to perform. There is, moreover, a continuing program of conditioning, competitive contact sports and training in judo. Aqua lung swimming and endurance swimming are also emphasized.

In addition, the "frogman" must learn communications and code, reconnaissance, mapping, commando tactics, operation of small craft, skills with small arms and various types of demolition, first aid, and other miscellaneous skills. This training is accomplished through the usual media of lectures, demonstrations, films, and practical work with complete coverage of all topics over a semi-annual period.

### B. STATEMENT OF THE PROBLEM

Since it was believed that the requirements for successful performance in fleet operations might differ from those of initial training, the present follow up was undertaken to determine the relationship between the same battery of predictors, administered at the time of entry in the initial program, and fleet performance.

### C. PROCEDURE

Approximately 15 months after the graduation of the last of five classes which had been used in the validation of the UDT selection battery, the Underwater Demolition Unit at Coronado (UDU) was visited

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to determine how many of the graduates were still on board. It was determined that 50 for whom complete test information was available were on board or had been recently detached.

These 50 frogmen had been assigned to one of three groups. Eleven men were in UDU team 11, 24 men were in UDU team 12, and 15 men were operating in the Pacific (WESPAC). The executive officers of these groups were asked to make forced rankings of the graduates in their team on several traits by placing the team members into one of five categories for each trait. Category 1 was for the least effective men rated, and category 5 was for the most effective men rated. The executive officers were forced to put, to the nearest integral number, 13% of the men in category 1, 22% in category 2, 30% in category 3, 22% in category 4, and 13% in category 5 for each trait rated. These percentages were chosen to approximate a normal distribution.

One of the traits upon which forced rankings were obtained was "Over-all Operating Ability," which represents a measure of general success in the team. The other traits, with the exception of swimming ability, were so highly correlated with over-all operating ability that separate analyses against these criteria were not warranted. "Swimming Ability" was found to be so specific a criterion that only swimming predictor scores were correlated with it.

Product-moment correlations were run between scores on all predictor tests and forced-rankings, coded from 1 to 5, on over-all operating ability. These validities for over-all operating ability are presented in Table 1. For reference purposes validities reported previously on these same tests for UDT training (2) and SCUBA training (1) are presented in this table.<sup>1</sup> Correlations of forced ranking of swimming ability with the swimming test scores obtained 19 to 31 months previously are presented in Table 2.

#### D. RESULTS

It may be noted in Table 1 that age, which was negatively correlated with success in training, is positively correlated with success in the team.

Tests in the Basic Test Battery were unrelated to success in the training program, but are significantly related to success in the fleet.

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<sup>1</sup>SCUBA training is an eight week program designed to teach use of SCUBA (Self-Contained Underwater Breathing Apparatus) to fleet personnel other than frogmen.

TABLE 1

Validity of Selection Variables for JDT Training,  
JDT Fleet Success, and SCUBA Training

Variable	JDT Training N=111 - 130	Fleet Success N=50	SCUBA Training N=97 - 126
Age	-.23**	.27*	-.15*
Education	.22*	.19	.19*
GCT	.56	.33*	.32*
ARI	.15	.39**	.29*
MDLH	-.36	.43**	.20*
CLER	-.01	.40**	.27**
Backstroke	.45**	-.05	.27**
Breast stroke	.52**	-.01	.17
Side stroke	.50**	.01	.28**
Underwater swim	.44**	-.12	.15*
300-meter swim	.47**	.01	.42**
Pull-ups	.05	-.12	.13
Squat-jumps	.24**	.04	.16
Push-ups	.26**	-.05	.11
Sit-ups	.30**	-.10	-.01
One-mile run	.44**	.07	.18
Ascendancy (GPP)	.12	.02	.16
Responsibility (GPP)	.08	.21	.25**
Emotional Stability (GPP)	.10	.23	.30**
Sociability (GPP)	.10	-.13	-.04
Cautiousness (GPI)	.06	-.12	-.04
Original Thinking (GPI)	.16	.23	.22
Personal Relations (GPI)	.22*	.18	.01
Vigor (GPI)	.12	.08	.16
General Activity (GZTS)	.06	-.03	.19*
Restraint (GZTS)	-.04	-.11	.02
Ascendancy (GZTS)	.01	.09	.30**
Sociability (GZTS)	.11	-.01	.15
Emotional Stability (GZTS)	.22*	.17	.29**
Objectivity (GZTS)	.05	.25*	.35**
Friendliness (GZTS)	.08	.25	.14
Thoughtfulness (GZTS)	.14	-.16	.03
Personal Relations (GZTS)	.00	.10	.23*
Masculinity (GZTS)	.10	.32*	.22*

\*Significant at the 5% level of confidence.

\*\*Significant at the 1% level of confidence.

TABLE 2

Correlations Between Pre-Training Swimming Tests and Ratings of Swimming Ability in the Team

Swimming Test	Rated Fleet Swimming Performance (N=70)
1. Backstroke	.43**
2. Breast stroke	.56**
3. Side stroke	.47**
4. Underwater swim	.34*
5. 300-meter swim	.51**

\*Significant at the 5% level of confidence.

\*\*Significant at the 1% level of confidence.

Swimming tests, which were very highly correlated with success in the training program, are unrelated to success in the fleet. From Table 2, we see though, that swimming tests are highly correlated with rated swimming ability in the fleet. Physical fitness tests, which were also positively correlated with pass-fail in training, are unrelated to team success.

Two personality traits attain statistical significance in the fleet validation; namely, Objectivity and Masculinity from the Guilford-Zimmerman Temperament Survey. Neither of these scales was valid for the UDT training group, while Emotional Stability in the Guilford-Zimmerman Temperament Survey, and Personal Relations in the Gordon Personal Profile had been.

E. DISCUSSION

Swimming ability and physical fitness, which are so important as predictors in training, become less important in discriminating degrees of fleet success. One reason for this could be that these men in the fleet, who have withstood the rigors of UDT training, are all good swimmers. The strength, stamina, and swimming proficiency required to survive the strenuous training program are more than sufficient to fulfill the requirements of the team, and therefore "fleet success" becomes dependent on other variables. The importance of ability to learn cognitive skills for UDT fleet operations is reflected in the high correlations between fleet performance and basic battery tests.

Although differences in swimming ability are not reflected in the correlations with ratings of Over-all Operating Ability, the differences in swimming ability measured by the pre-training selection battery still exist. This is indicated by the correlations between pre-training swimming tests and fleet ratings of swimming ability given in Table 2.

Of interest is the similarity between validities for SCUBA (1) and UDT fleet groups on personality variables, given in Table 1. Although certain of these validities were not statistically significant for the UDT group, probably due to the small number of cases involved, they were of meaningful magnitude for both groups on Responsibility, Emotional Stability, Objectivity, and Masculinity.

#### F. CONCLUSIONS

While it would have appeared to be reasonable to substantially lower Basic Test Battery requirements on the basis of validity studies performed in UDT training, examination of validity information for fleet performance demonstrates that this would be unwise without further investigation. Based on previous findings (2), use of swimming and physical fitness tests for UDT selection is also recommended.

#### REFERENCES

1. Anderson, A.V., & Hertzka, A.F. Selection Standards for SCUBA Diver Training. U.S. Naval Personnel Research Field Activity, San Diego, California, Report No. 110, February 1957.
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