



The Predictive Validity of the Initial Fitness Test for Attrition in USAF Special Warfare Assessment and Selection

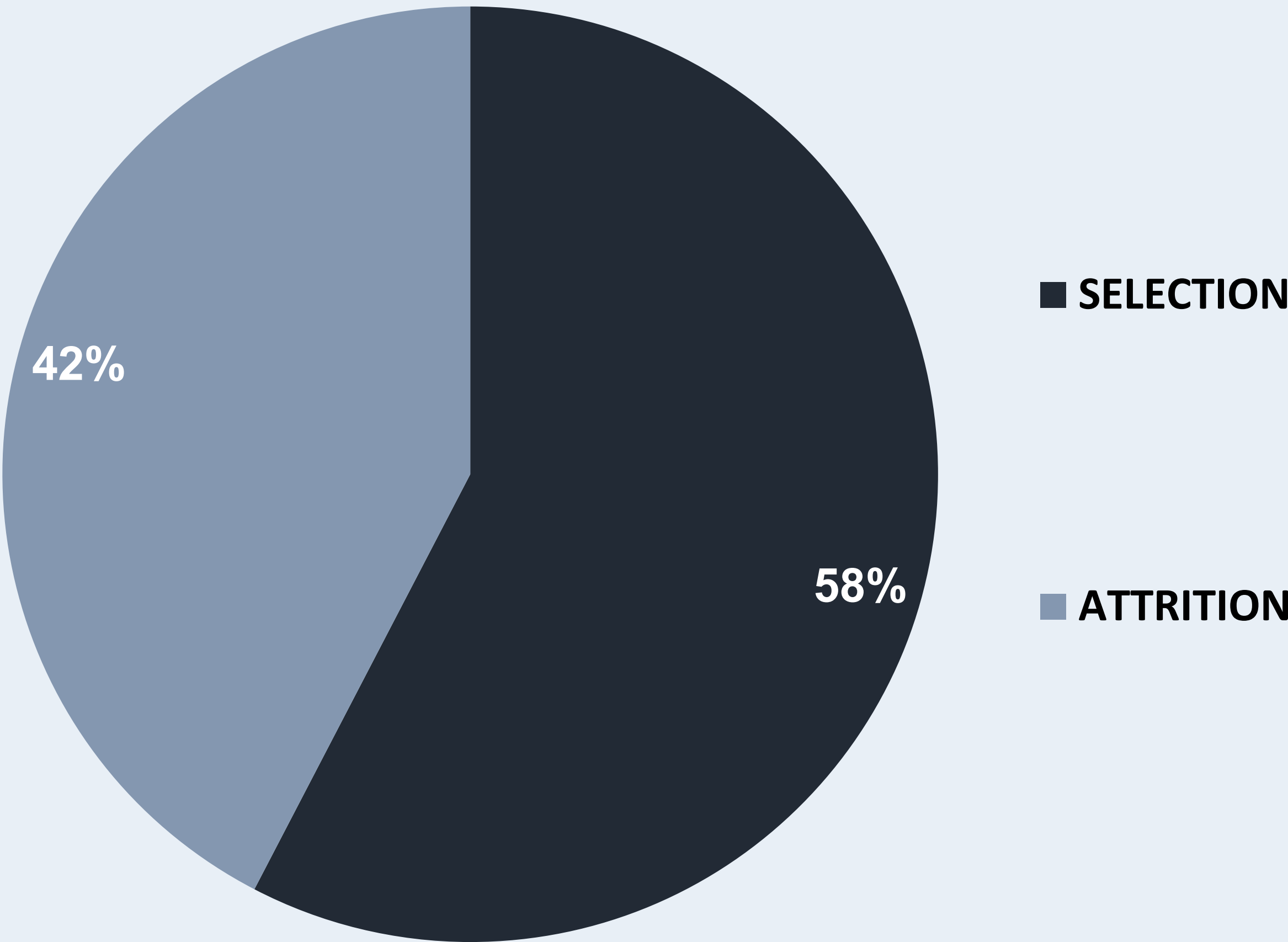
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INTRODUCTION

Attrition within elite military training pipelines, such as the U.S. Air Force’s Special Warfare Assessment and Selection (SWAS) course, represents a significant loss of organizational resources and candidate investment. The Special Warfare Training Wing (SWTW) utilizes an Initial Fitness Test (IFT) at the outset of SWAS as a prerequisite for continuation. This test measures muscular endurance (pull-ups, sit-ups, push-ups) and cardiorespiratory fitness (1.5-mile run, timed swim). The purpose of this analysis is to quantify the predictive validity of these initial fitness metrics in determining a candidate’s probability of successful course completion.

MATERIALS AND METHODS

A retrospective analysis was conducted on data from candidates ($n = 262$) who participated in the two most recent SWAS courses. A binary logistic regression model was employed to analyze the relationship between the five IFT performance metrics and the dichotomous outcome of selection ($n = 151$) versus attrition ($n = 111$). The model calculated the odds ratio (OR) for each IFT component to quantify its effect on the likelihood of attrition.



RESULTS

The analysis demonstrated that superior performance across all IFT components was associated with a decreased probability of attrition. For each additional repetition performed, the odds of attrition decreased by 12.4% for pull-ups (OR = 0.876), 1.6% for sit-ups (OR = 0.984), and 1.6% for push-ups (OR = 0.984). Conversely, for each additional second taken to complete the timed events, the odds of attrition increased by 0.5% for the 1.5-mile run (OR = 1.005) and 0.7% for the swim (OR = 1.007).

CONCLUSION

The findings confirm that the IFT is a valid instrument for predicting attrition within the SWAS course. While all components are directionally predictive, muscular strength, particularly in pull-ups, demonstrates the strongest effect size in forecasting a candidate’s likelihood of success. These results provide an empirical basis for SWTW to refine recruiting standards and develop pre-accession training protocols that are precisely targeted at the physical attributes most critical for pipeline success. This data-driven approach can enhance selection efficiency, reduce attrition rates, and optimize human capital investment.

IFT PREDICTORS OF ATTRITION: LOGISTIC REGRESSION RESULTS (N = 262)

IFT COMPONENT	MEASURE (UNIT)	ODDS RATIO (OR)	ODDS RATIO (OR) FOR ATTRITION (95% CI) OR < 1.0 = Lower Odds of Attrition OR > 1.0 = Higher Odds of Attrition	EFFECT ON ATTRITION (per unit change)	INTERPRETATION
PULL-UPS	Total Repetitions (per repetition)	0.876	0.876 (0.812 – 0.943)	↓ 12.4% decrease in odds of attrition	STRONGEST PREDICTOR Each additional pull-up reduces the odds of attrition by 12.4%.
SIT-UPS	Total Repetitions (per repetition)	0.984	0.984 (0.972 – 0.996)	↓ 1.6% decrease in odds of attrition	Each additional sit-up reduces the odds of attrition by 1.6%.
PUSH-UPS	Total Repetitions (per repetition)	0.984	0.984 (0.973 – 0.996)	↓ 1.6% decrease in odds of attrition	Each additional push-up reduces the odds of attrition by 1.6%.
1.5-MILE RUN	Time to Complete (per second)	1.005	1.005 (1.002 – 1.008)	↑ 0.5% increase in odds of attrition	Each additional second increases the odds of attrition by 0.5%.
TIMED SWIM	Time to Complete (per second)	1.007	1.007 (1.003 – 1.011)	↑ 0.7% increase in odds of attrition	Each additional second increases the odds of attrition by 0.7%.



KEY TAKEAWAYS



All five IFT components significantly predicted attrition.



Pull-ups demonstrated the largest effect size, reducing odds of attrition by 12.4% per repetition.



Slower run and swim times were associated with higher odds of attrition.



These findings support the IFT as a valid, evidence-based tool for screening SWAS candidates.