# DIAGNOSTIC VALUE OF REACTION TIME TESTS IN THE ATHLETIC COACHING SCHOOL

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(Introduced by Coleman R. Griffith)

Reaction time test results, secured through the testing of several hundred general coaching school students and athletes during the years 1925 to 1929, have been examined to determine whether or not any relationship exists between athletic achievement and speed of reaction.

Athletic achievement was determined on a basis of membership on teams and squads, and it was found that the scores of the individuals who could be designated as athletes on this basis were scattered throughout the range of the distributions, except where the reactions were extremely slow. There was, therefore, no correlation between athletic achievement and speed of reaction time. Some good athletes showed relatively slow reaction time, while some non-athletes were found to be among the fastest reactors. In other words, while no successful athletes were to be found among the extremely slow reactors, other factors than reaction time must be of such importance to athletic ability that a man who is not unusually fast in reaction can still be a successful athlete, while a man who has the advantage of being a fast reactor may be unsuccessful as an athlete if he lacks the other necessary qualities.

In making the investigation described, however, it was found that the distribution curves showed a tendency toward normal distribution in about 90% of the cases, the remaining 10% causing an extension at the slow end of the curve. This tendency occurred with such frequency that an investigation of the factors responsible for it was undertaken.

It was found that complex reaction tests showed a greater tendency to give this unusual distribution than did the simple reaction tests, while curves based on data other than reaction time test results, i. e., tapping test scores and academic averages, did not show this peculiar extension at the poor end which characterized the reaction test scores. Diagrams 1 and 2 show typical distributions for the simple and complex reaction time test scores for coaching school freshmen. These diagrams are based on records for the year 1926-27.

It had already been determined that no successful athletes were to be found among the individuals whose scores made up these extreme parts of the reaction time curves, and investigation of the scholastic records of these persons gave the following facts:

In 1925-26 the total number of Coaching School Freshmen tested was 80. The number scoring 310 sigma or above was 16, or 20% of the total. Of these 16 cases, 10, or 62%, were eliminated (55% of the entire group) : 1 was dismissed for using assumed name and false credits; 3 were dropped for poor work; and 6 withdrew, of whom 2 were on probation at one time or another. The remaining 6, or 37%, continued through four years, 4 graduating: 2 with academic averages slightly above median; and 2 with academic averages slightly below median.
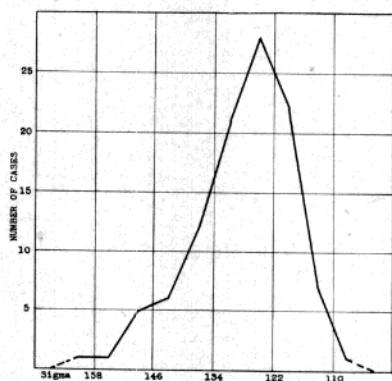


FIG. 1. Simple reaction time, Coaching School Freshmen, 1926-27.
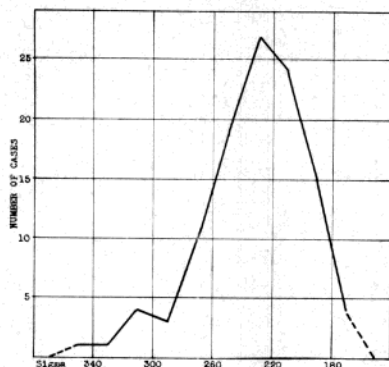
FIG. 2. Complex reaction time, Coaching School Freshmen, 1926-27.

In 1926-27 the total number of Coaching School Freshmen tested was 105. The number scoring 300 sigma or above was 8, or 7% of the total. None of these 8 remained through four years, all being eliminated. One was dropped (unsatisfactory grades) ; and 7 withdrew: 1 reentered in General Education, graduating 1930; and 3 were on probation at one time or another.

On the basis of these results it was recommended that similar tests be given to the Coaching School freshmen in October, 1929, with the idea in mind that if curves constructed from these tests scores should show the same abnormality which characterized those of 1925-26 and 1926-27, some effort should be made to advise with the individuals whose scores fall in the abnormally low area of the distribution, to determine whether or not assistance could be given them to bring about better adjustment.

The tests were given to 120 students, and the distribution of the complex reaction time records was similar to those of the preceding groups. Eight, or 6% of the total number, scored 260 sigma or above. No action, however, was taken in the matter of personal consultations, and the records at the end of the first semester showed no athletic achievement on the part of these 8 individuals. As for scholastic achievement, 5, or 62%, have withdrawn; and 3, or 38%, remain with scholastic averages of 2.80, 3.06, and 3.28. The median scholastic average for the 120 tested was 3.02.

It seems reasonable to conclude, therefore, that although reaction time tests are not diagnostic of either athletic or scholastic success, the records indicate possibility of predicting non-success, if elimination may be considered the criterion.