Proceedings of the Iowa Academy of Science

Volume 34 | Annual Issue Article 93

1927

Some Psycho-Physiological Measurements of Athletes

John G. Jenkins
Iowa State College

SOME PSYCHO-PHYSIOLOGICAL MEASUREMENTS OF ATHLETES

JOHN G. JENKINS

These tests were undertaken with two objects in view: (1) To make psycho-physiological measurements of a group of successful athletes, in order to develop a placement test for athletes. (2) To compare the results of these tests with the results of the same tests upon a control group of non-athletes.

Twenty-four athletes were chosen, six men each from football, track, wrestling and basketball. Those chosen were regular members of these teams, whose schedules would permit their reporting at the desired time for these tests. Weight may be added to the significance of the tests, if it is mentioned that there were included in this group:

(a) Two men who have won National A.A.U. Wrestling Championships.
(b) One National A.A.U. Second place man.
(c) One A.A.U. Mid-West Wrestling Champion.
(d) One Missouri Valley Wrestling Champion.
(e) Six Track Men, all of whom are members of the world's record relay teams.

While it is not easy to obtain rankings for basketball and football men, those chosen were men who had attracted favorable comments from the press, and who were, in the estimate of the coach concerned, outstanding players.

These men were then given the following tests:

(a) A tapping test, using Whipple's Tapping Board.
(b) A modification of Scott's "Three Hole Test."
(c) A series of 200 visual reactions.
(d) A steadiness test, employing Whipple's apparatus.
(e) An aiming test, using Whipple's targets.

In the reaction time work, an Ewald Chronoscope was used in series with a 100 dv. tuning fork. For the other tests, a Stoelting electric counter was used to record results. In addition to the tests, intelligence test scores and scholastic records were available.

All measurements were made in a small room located within a few feet of the main floor of the gymnasium. To minimize diurnal variation all tests were given between four and five in the afternoon. Dresslar points out that tapping efficiency, for ex-

ample, reaches its peak of efficiency at about four o'clock, also that mental exercise increases efficiency, so we have reason to conclude that favorable scores will be made during that hour.

To keep conditions constant, a rule to exclude all people other than the experimenter and observer was rigidly adhered to. All tests were performed by daylight. The observer was shielded from the view of the experimenter by a wooden partition, which also carried on its reverse side the recording instruments, switches, etc.

Directions were typed out and presented in the same words throughout the experiment. In reaction time, the directions were worded to attempt to give the observer the motor attitude. In the other tests, the observer was always given directions in the positive form (such as "Hold this stylus as steadily as you possibly can," rather than "Don't let this stylus touch the sides of the hole.")

In addition to the group of athletes, a group of twenty non-athletes is being confronted with the same tests. This group was selected from the speaker's classes in psychology, together with a few volunteers, the condition of selection being that none of them ahd ever been a member of an athletic team. These men varied in type from the robust, athletic-appearing individual, to the neurasthenic ascetic, with the balance of power well towards the first type.

The results of the tests show no very significant differences between men engaged in different sports. Track men make the poorest records on the steadiness test, with the football men making high records.

The comparison of the athletes with the control group was more fruitful. It is interesting to note that the athletes did slightly better than the rest of the college in point of intelligence, and that they showed a scholastic average within a fraction of one per cent of the college average.

As to standing on the tests, the following table may give some idea of the standings of the two groups:

In steadiness,	90.0	of athletes equal or exceed control mean
In aiming,	77.3	of athletes equal or exceed control mean
In 3-hole test,	45.5	of athletes equal or exceed control mean
In tapping,	63.6	of athletes equal or exceed control mean
In reaction time,	39.1	of athletes equal or exceed control mean

CONCLUSIONS

(1) These data would seem to indicate that the athletes who were examined are about as intelligent as the average college stu-

dent; that they react about as fast, but are better coördinated and steadier, than a group of non-athletes. (2) The full significance of the differences between the members of the various teams in point of performance on these tests remains to be checked by further work.

IOWA STATE COLLEGE,
AMES, IOWA.