

# Proceedings of the Iowa Academy of Science

---

Volume 27 | Annual Issue

Article 45

---

1920

## Serial Action as a Basic Measure of Motor Capacity

C. Frederick Hansen

Copyright ©1920 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

---

### Recommended Citation

Hansen, C. Frederick (1920) "Serial Action as a Basic Measure of Motor Capacity," *Proceedings of the Iowa Academy of Science*, 27(1), 234-235.

Available at: <https://scholarworks.uni.edu/pias/vol27/iss1/45>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

as to the placing of an individual in a group — regarding quickness of action.

2. It is impossible to predict from one or two motor tests how a subject will rank in his group as to individual variability (constancy) in other motor tests. At least the M.V. shows up to be a fleeting factor from test to test. Either the M.V. is not a minute enough measure of individual variability or no personal equation exists in this respect. The negative outcome ought to have the greatest bearing on vocational motor testing.

A wealth of other significant general and special results, which lack of space forbids stating in full here, also were evolved from the above investigations.

It may suffice to note, as a matter of general interest, that regarding the highest rate of movement for the different bodily members, we get the following sequence:

(1) lips, (2) index finger, (3) jaws, (4) thumb (grip), (5) elbow, (6) foot, (7) head.

As to the range of different bodily reactions, we may state that the individual's variation from the average of the group is very nearly proportional to the personal range in M.V. for all parts of the body here tested except the jaws. The rate of the quickest bite, then marks out the individual most clearly in the group.

---

## SERIAL ACTION AS A BASIC MEASURE OF MOTOR CAPACITY

C. FREDERICK HANSEN

Motor tests involving "continuous discriminative reactions" or "serial action" are being standardized by the psychologist with the end in view of reproducing, in dealing with his practical problems, the actual conditions of simple daily motor activities more closely than obtained in the traditional reaction time tests. These newer measures of motor capacity recognize the essentially fluid character of stimuli and reactions—their fundamentally continuous interplay, which is apparent not only in simple motor achievements like walking or handling tools, but also in the complex activities of the musician, the telegrapher, the typist, or the expert mechanic. In the analysis, therefore, of motor capacities for clinical, vocational, or industrial purposes, the performance of a subject in a standardized test of serial action may serve as an index of his basic motor capacity, applicable to many problems.

Our program has been:

1. To determine experimentally what kinds of stimuli, associations, and reactions are most natural and basic, thus leading to the measurement of inherent rather than acquired abilities.
2. To secure a simple and practical device which can be transported, set up, and operated without difficulty.
3. To control as far as possible every variable in the procedure, objective and subjective.
4. To measure the performance in this test of certain homogeneous, representative groups of persons.
5. To correlate the results obtained with achievement in the particular vocational or industrial pursuits involved by means of practical criteria.

Suitable apparatus having been devised and the test standardized, we have investigated its value for (1) indicating general motor capacity by a comparison of scores of 158 university sophomores in this test and in seven other motor tests; (2) predicting the probable competence or incompetence of beginners in telegraphy by testing 173 men in the Army Vocational School at this University; (3) the analysis of native capacity of ninety music students for musical action; (4) the prediction of skill in typewriting based on about 280 cases from various commercial courses.

---

## THE MEASUREMENT OF MOTILITY IN CHILDREN

LILLIAN TOW

What we expect and demand in discipline and performance at each age should depend upon a child's development, mental, physical, and functional.

In this laboratory the evaluation for scientific and diagnostic purposes of motor rather than mental capacities is being stressed. The object of this investigation is to find what the motor equipment of children is on entering school. The discovery of the basic motor tests which applied at five and six years of age will give results which are reliable and significant in that they throw light on motor ability. Previous investigations on young children have had for their fundamental purpose the comparison of mental and motor traits. The aim of this study is to investigate the responses of as many different sets of muscles as possible and to compare these responses one with another to see if the nature of one is an index to a corresponding nature in another.