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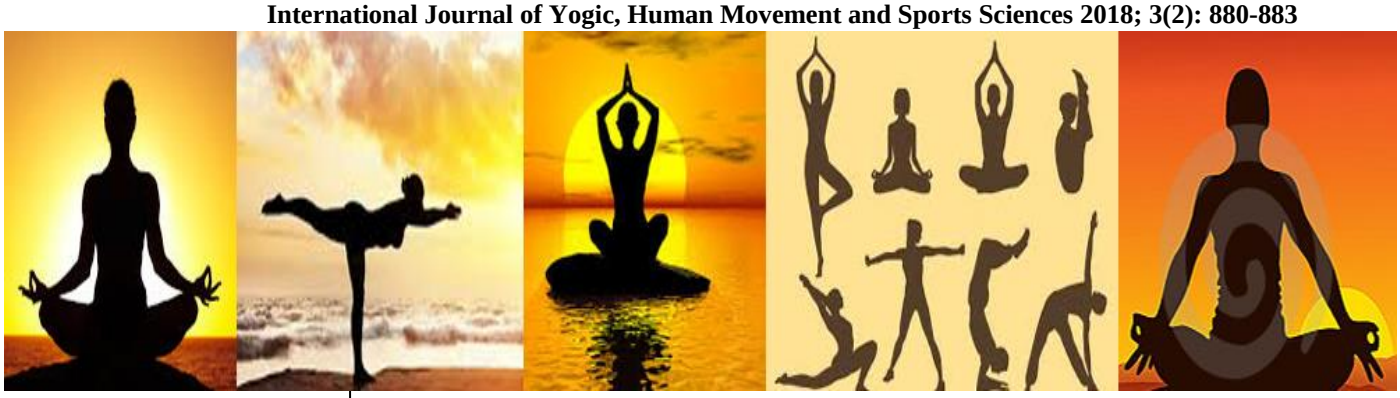

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Effect of dominant somatotype on motor quality trainability

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Abstract
The study was to find out the effect of dominant somatotype on motor quality trainability of Come and Play Scheme of Lakshmi bai National College of Physical Education. Screening of all the male trainees was carried out to select 20 subjects each for Endomorphy, Mesomorphy and Ectomorphy groups using Heath Carter Somatotype method suggested by ISAK (International Society for Advancement Kinathropometry).The age of subjects ranged from 15-17 years. Further, each somatotype groups (n=20) was divided in to two equated groups of ten each to act as control and experimental groups. Initial tests on motor qualities were conducted on all the sixty selected subjects of the study. The experimental groups were given training for eight weeks (three days per week) as per the planned schedule. Control groups had routine activity schedule and other daily life activities same as the experimental groups. Post-test was conducted on all sixty subjects after completion of eight weeks of training. The data collected on sixty subjects before start of the training and after completion were analyzed to find out the effect of dominant somatotype in adapting to motor qualities. The difference of pre-test and post-test of both experimental and control groups were compared using independent 't' test. The level of significance was set at .05. The findings of the study revealed that the endomorph were more receptive in adapting with the training schedule and improved significantly on their motor qualities such as speed, reaction time and endurance. Other variables like agility, static balance (right leg), static balance (left leg), dynamic balance, coordination, power, grip strength (left), grip strength (right), leg strength and back strength did not show any improvement. Further it revealed that mesomorphs were more receptive in adapting with the training schedule to improve significantly on their motor qualities such as agility, speed, static balance (right leg), static balance (left leg) and power. Other variables like reaction time, dynamic balance, coordination, grip strength (left), grip strength (right), leg strength and back strength did not show any improvement. The ectomorphs showed significant improvement on their motor qualities such as speed, static balance (right leg), static balance (left leg), endurance and leg strength. Other variables like agility, reaction time, dynamic balance, coordination, power, grip strength (left), grip strength (right) and back strength did not show any improvement.
The present study revealed that the mesomorphs and ectomorphs were more responsive to the training schedule to improve significantly on their motor qualities as compared to endomorphs.

Keywords: Somatotype, endomorph, mesomorph, ectomorph, motor quality trainability

Introduction
When looking at the various aspects of life many things need to be taken into consideration. Some of those things involve what we base our thoughts on and what we believe to be true and what we believe to be false. What a lot of people do not realize is that our world is constituted of ideas or theories. One theory specifically curious to me is the Constitutional Theory, specifically focusing on the idea of somatotyping. My concern with this theory and the ideas that follow it. To begin with there needs to be an understanding of what exactly somatotyping is. By definition somatotyping is: "the structure or build of a person, especially to the extent to which it exhibits the characteristics of an ectomorph, an endomorph, or a mesomorph". A U.S. psychologist W.H. Sheldon created the idea of somatotyping; in his system he classified human beings in regards to their body type or build. He based his classifications on three specific body types, those being: endomorphic, or round, fat type; mesomorphic, or muscular type; and ectomorphic, or slim, linear.

Methodology

Selection of subjects

Screening of all the male trainees under Come and Play of Scheme Lakshmi bai National College of Physical Education. was carried out to select 20 subjects each for Endomorphy, Mesomorphy and Ectomorphy groups using Heath Carter Somatotype method suggested by ISAK (International Society for Advancement Kinathropometry). The age of subjects ranged from 15-17 years. Further, each somatotype groups (n=20) was divided in to two equated groups of ten each to act as control and experimental groups.

Selection of Variables

Motor quality variables namely reaction time, power, coordination, agility, balance, speed, endurance and related variables like grip strength (left and right), leg strength and back strength.

Administration of training programme

Initial tests on motor qualities were conducted on all the sixty selected subjects of the study. The experimental groups were given training for eight weeks (three days per week) as per the planned schedule. Control groups had routine activity schedule and other daily life activities same as the experimental groups. Post-test was conducted on all sixty subjects after completion of eight weeks. The data collected on sixty subjects before start of the training and after completion were analyzed to find out the effect of dominant somatotype in adapting to motor qualities.

Statistical techniques used in the study

The difference of pre-test and post-test of both experimental and control groups were compared using independent 't' test. The level of significance was set at .05. Descriptive and 't' ratios were calculated using the SPSS software.

Analysis and discussion of results

Significance of difference between mean scores on effect of training on motor qualities of endomorphs has been presented in table 1.

Table 1: Descriptives and 't' table for both the experimental and control group in endomorphs

Variables	Groups	N	Mean	Standard Deviation	Mean Difference	df	't'	P
Agility	Experimental	10	0.20	0.41	0.10	18	0.69	0.50ns
	Control	10	0.10	0.13				
Speed	Experimental	10	0.20	0.15	0.14	18	2.75	0.01**
	Control	10	0.06	0.07				
Reaction time	Experimental	10	0.88	0.95	0.63	18	2.06	0.05*
	Control	10	0.25	0.18				
Static balance	Experimental	10	3.10	2.83	1.32	18	0.72	0.48ns
(Right Leg)	Control	10	4.42	5.11				
Static balance	Experimental	10	3.99	3.54	0.00	18	0.00	1.00ns
(Left Leg)	Control	10	3.99	4.73				
Dynamic balance	Experimental	10	7.00	8.23	3.00	18	0.98	0.34ns
	Control	10	4.00	5.16				
Coordination	Experimental	10	1.80	2.25	0.00	18	0.00	1.00ns
	Control	10	1.80	0.92				
Power	Experimental	10	1.00	1.15	0.50	18	1.16	0.26ns
	Control	10	0.50	0.71				
Endurance	Experimental	10	1.02	0.51	0.47	18	2.55	0.02*
	Control	10	0.55	0.28				
Grip Strength	Experimental	10	1.50	1.68	0.41	18	0.64	0.53ns
(Left)	Control	10	1.09	1.06				
Grip Strength	Experimental	10	1.81	2.48	0.65	18	0.75	0.46ns
(Right)	Control	10	1.16	1.13				
Leg Strength	Experimental	10	0.42	11.96	1.95	18	0.51	0.61ns
	Control	10	1.53	1.06				
Back Strength	Experimental	10	0.85	3.95	0.40	18	0.30	0.76ns
	Control	10	1.25	1.27				

** significant at 0.01 level. *significant at 0.05 level. ns= not significant.

Significance of difference between mean score on effect of training on motor qualities of mesomorphs has been presented in the table 2.

Table 2: Descriptives and 't' table for both the experimental and control group in mesomorphs

Variables	Groups	N	Mean	Standard Deviation	Mean Difference	df	't'	p
Agility	Experimental	10	0.39	0.30	0.28	18	2.89	0.01**
	Control	10	0.11	0.10				
Speed	Experimental	10	0.72	0.44	0.67	18	4.77	0.00**
	Control	10	0.05	0.06				
Reaction time	Experimental	10	0.89	1.07	0.51	18	1.46	0.16ns
	Control	10	0.38	0.21				
Static balance	Experimental	10	4.42	4.64	3.89	18	2.63	0.02*
(Right Leg)	Control	10	0.53	0.57				
Static balance	Experimental	10	6.08	5.37	4.78	18	2.64	0.02*
(Left Leg)	Control	10	1.29	1.94				
Dynamic balance	Experimental	10	1.00	3.16	0.00	18	0.00	1.00ns

	Control	10	1.00	3.16				
Coordination	Experimental	10	0.70	1.82	0.30	18	0.43	0.67ns
	Control	10	1.00	1.24				
Power	Experimental	10	1.50	0.53	0.60	18	3.08	0.01**
	Control	10	0.90	0.32				
Endurance	Experimental	10	2.76	2.14	1.14	18	1.12	0.28ns
	Control	10	1.62	2.37				
Grip Strength	Experimental	10	0.81	4.43	0.14	18	0.10	0.92ns
(Left)	Control	10	0.95	0.55				
Grip Strength	Experimental	10	1.14	3.48	0.11	18	0.10	0.92ns
(Right)	Control	10	1.03	0.70				
Leg Strength	Experimental	10	8.88	7.72	1.77	18	0.50	0.62ns
	Control	10	7.11	8.03				
Back Strength	Experimental	10	4.35	4.32	2.40	18	1.72	0.10ns
	Control	10	1.95	0.926				

** significant at 0.01 level. *significant at 0.05 level. ns= not significant

Significance of difference between mean score on effect of training on motor qualities of ectomorphs has been presented in the table 3.

Table 3: Descriptives and 't' table for both the experimental and control group in Ectomorphs

Motor quality Variables	Groups	Number	Mean	Standard Deviation	Mean Difference	df	't'	p
Agility	Experimental	10	0.25	0.50	0.21	18	1.31	0.21ns
	Control	10	0.04	0.03				
Speed	Experimental	10	0.24	0.20	0.19	18	2.99	0.01**
	Control	10	0.05	0.03				
Reaction time	Experimental	10	0.54	0.49	0.32	18	1.88	0.08ns
	Control	10	0.22	0.21				
Static balance	Experimental	10	6.19	6.02	5.98	18	3.08	0.01**
(Right Leg)	Control	10	0.21	1.17				
Static balance	Experimental	10	5.25	4.64	4.51	18	3.05	0.01**
(Left Leg)	Control	10	0.74	0.55				
Dynamic balance	Experimental	10	4.00	5.16	3.00	18	1.56	0.14ns
	Control	10	1.00	3.16				
Coordination	Experimental	10	2.70	2.62	1.60	18	1.80	0.09ns
	Control	10	1.10	0.99				
Power	Experimental	10	2.00	2.26	1.30	18	1.77	0.92ns
	Control	10	0.70	0.48				
Endurance	Experimental	10	2.67	1.48	1.66	18	3.12	0.01**
	Control	10	1.01	0.78				
Grip Strength	Experimental	10	2.20	3.98	1.28	18	0.98	0.34ns
(left)	Control	10	0.92	0.99				
Grip Strength	Experimental	10	2.19	2.10	1.07	18	1.08	0.29ns
(Right)	Control	10	1.12	2.30				
Leg Strength	Experimental	10	6.18	6.16	5.40	18	2.55	0.02*
	Control	10	0.78	2.60				
Back Strength	Experimental	10	4.15	8.64	1.34	18	1.96	0.07ns
	Control	10	2.81	7.17				

The findings of the study revealed that the endomorph were more receptive in adapting with the training schedule and improved significantly on their motor qualities such as speed, reaction time and endurance. Other variables like agility, static balance (right leg), static balance (left leg), dynamic balance, coordination, power, grip strength (left), grip strength (right), leg strength and back strength did not show any improvement.

Further it revealed that mesomorphs were more receptive in adapting with the training schedule to improve significantly on their motor qualities such as agility, speed, static balance (right leg), static balance (left leg) and power. Other variables like reaction time, dynamic balance, coordination, grip strength (left), grip strength (right), leg strength and back strength did not show any improvement.

The ectomorphs showed significant improvement on their motor qualities such as speed, static balance (right leg), static balance (left leg), endurance and leg strength. Other variables like agility, reaction time, dynamic balance, coordination, power, grip strength (left), grip strength (right) and back strength did not show any improvement.

The present study revealed that the mesomorphs and ectomorphs were more responsive to the training schedule to improve significantly on their motor qualities as compared to endomorphs. The training schedule was not effective in making improvement in any of the dominant somatotype on their dynamic balance, coordination, grip strength (right and left) and back strength. Therefore it is resolved that the exercises included in the training schedule for developing dynamic balance, coordination, grip strength (right and left) and back strength may be manipulated to get desired results

Conclusions

The following conclusions were drawn on the basis of result obtained and within the limitation identified. The mesomorphs and ectomorphs were more responsive to the

training schedule to improve significantly on their motor qualities as compared to endomorphs. The training schedule was not effective in making improvement in any of the dominant somatotype on their dynamic balance, coordination, grip strength (right and left) and back strength. Therefore it is resolved that the exercises included in the training schedule for developing dynamic balance, coordination, grip strength (right and left) and back strength may be manipulated to get desired results.

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