Psychobiological and computer test capabilities of the candidates proposed for the post of physical education teachers

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Abstract: The aim of the study is to identify psychobiological and computer test capabilities of the candidates proposed for the post of physical education teachers. The researchers used the descriptive experimental method on the total sample contest of 60 candidates, for test computer capabilities psychobiological ones to measure: serotonin, cortisol, cholinesterase and IQ, together with work under pressure, work a mid distractions, speed of decision making power observation the level of intelligence, memory and concentration and synergy neuromuscular. Blood sample was drawn for biological tests, together with the proposed computer test capabilities of the candidate for the post of physical education teachers. The results indicated a significant changes of the biological tests variables for the favour of the group (A), composed of the higher values of computer test, compared with group (F) composed of the lower values of computer test. Also the results revealed that there are statistically significant differences between pre and post indices experimental group in the over all test questions and in the direction of the dimensional measure computer based test capabilities. Conclusion: Biological tests together with computer tests are together recommended for the candidates proposed for the post of physical education teachers, and their development. Recommendation: to add biological tests of the study to the proposed computer tests, to be used to identify the capabilities of the candidates for the post of physical education teachers.

Introduction and research problem

Psychobiological assessment is very important for the post of physical Education teacher, due to the fact that the teacher is working with youth and teenagers. So, the psychobiological assessment of variables related to the brain, such as neurotransmitter serotonin, acetylcholine together with the stressor hormone cortisol and IQ will help to indicate the intellectual functions of the brain.

This could well explain the many functions of the brain that is associated with higher intelligence and by combining the temporary bits of working memory, it will give us (1) the abilities to prognosticate (2) plan for the future (3) delay action so that the sensory information can be weighed until the best course of response is decided (4) solve complicated physical and physiological problem. All these abilities are important for the selected teacher in schools to help the teachers to deal with students in a scientific manner (Guy ton, Hall 2006, Hatfield, 2013).

Psychobiology (PB) is the branch of psychobiology studying the relationships existing between behaviour and the body, focusing its efforts mainly on the brain for most students in psychology, however, movement had less appeal than other topics covered by psychobiology, despite the great number of nervous areas implied in it, and the historical fact that the first notions on the functioning of the brain rise from the study of movement control, As psychobiology relates behavior with body processes and in particular, with brain activities, the number of disciplines involves in it is quite high (Garrett, 2003).

Research aims:

The aims of the study were to identify:

Psychobiological and computer test capabilities of candidates proposed to work as physical education teachers.

Research Questions:

What are the appropriate proposed Psychobiological and computer capabilities, to assess teacher candidates to work as physical Education teachers?

Research steps:

Research method: Researchers used the descriptive and experimental approach due to the suitability of the nature of the research to the suitability of pre-post measurements.

Research community:

The graduates of physical Education of the universities of [Benisuef – Helwan – Alexandria – Mansoura] of years 2010 – 2013.

Research sample:

The research sample were selected according to expert from the following categories, they were 60 graduates:

Table (1): Sample rating categories

Samples	Group A					Group F				
	C.T Degree	IQ Degree	Cortisol mg/dL	Serotinine ng/mL	Cholineestrase u/L	C.T Degree	IQ Degree	Cortisol mg/dL	Serotinine ng/mL	Cholineestrase u/L
1	85.00	131.00	7.00	160	6500.00	59.00	109.00	20.00	110	5500.00
2	90.00	137.00	8.00	200	9000.00	55.00	115.00	22.00	107	5750.00
3	87.00	135.00	7.00	175	7000.00	55.00	112.00	20.00	100	5600.00
4	95.00	141.00	9.00	180	11000.00	60.00	117.00	24.00	105	5850.00
5	92.00	140.00	8.50	200	10000.00	57.00	117.00	22.00	102	5800.00
Average	89.80	136.80	7.90	183	8700.00	57.20	114.00	21.60	105	5700.00

Search tools:
Eight axes were proposed: according to computer experts:

1- To serve under pressure.
2- Work amid distractions.
3- The speed of decision.
4- The observation power.
5- The intelligence level.
6- Memory and concentration.
7- Synergy neuromuscular.

8- Teachings skills for teachers of physical education.

As for the biological tests, according to biologic experts:

- Cortical hormone.
- Serotonin hormone.
- Cholinesterase enzyme.
- Together with: Stanford binet intelligence scale fifth edition.

Table (2):

Samples	Group A			Group F		
	Age Year	Weight Kg	Height Cm	Age Year	Weight Kg	Height Cm
1	28	79	174	27	82	179
2	30	85	180	31	75	166
3	32	89	177	35	95	185
4	33	75	168	35	79	182
5	36	95	183	37	85	176
Average	**31.80**	**84.60**	**176.40**	**33.00**	**83.20**	**177.60**

Results and Discussion;

Table (1) indicated an increased serotonin concentration in case of group (A) compared to group (F).

This increased serotonin concentration might stimulate brain cells and affect positively the higher function of the brain including the action on intelligence level, memory and concentration, both variables affect also observation power and the speed of decision.

This was in agreement with the researchers (Dash et al. 2004. Dick and katsuyuki. 2004 Baddeley (2003) Conlon and Hobson 1999).

They added that thoughts and memory involves signals in many portions of the cerebral cortex, thalamus, limbic system and the reticular formation of the brain stem, meaning the intellectual functions of the brain.

Guyton and hall (2006) reported that memories are stored in the brain due to nerve cells activities of the brain, which are called memory traces due to their pathway in different parts of the brain sections. After the establishment of the traces, they are activated to memories.

Serotonin is present in different part of the body, specially in the brain stem, hypothalamus and the limbic system and the limbic system and the neocortex. Serotonin is formed in the body by hydroxylation and decarboxylation of the essential amino acid tryptophan. Matt Ridley (2001) reported that serotonin gene related to intelligence. The first researcher that reported the intelligent Quotient is the researcher Spearman 1904, and called it as the general

intelligence (g), and Stanford Binet intelligence scale (fith edition) used in this study is one of the most important. Intelligent scale. Shattergea and Shinde (2006) added that serotonin affect the brain and behavior, and its increased concentration induced general intelligence (g), and memory stimulation.

Manal shafee (2009) reported also that both iGF$_2$ R gene and neurohormone are related to leadership and intelligence Quotion (IQ) among 39 leaders in Egypt, as leadership and intelligence are important traits of leader.

Plomin et al (1998) examined a quantitative trait locus associated with cognitive ability in children and that serotonin is an important neurohormone affecting intelligence among children.

While (Haier 1992) reported intelligence and changes in cerebral glucose metabolic rate following learning, as the glucose is the main fuel of the brain and increased concentration while learning.

Table (3) Intelligence scale in group (A) compared with group (F)

Samples	Age Year	Weight Kg	Height Cm	C.T Degree	IQ Degree	Cortisol mg/dL	Serotinin ng/mL	Cholinestrase u/L
Group A	b31.8+1.51	84.6a+3.11	176.4+b3.11	89.8±3.96 a	136.8±4.02a	7.9±0.89a	183.0±17.17 a	8700±1923a
Group F	33.0a+1.48	83.2b+3.01	177.6a+3.41	57.2±2.20 b	114.0±3.4641 b	21.6±1.67 b	104.8±3.90b	5700±145.76 b
LSD	1.98	2.49	4,21	4.47	5.47	1.95	18.17	1989.35

Table (3) indicated a significant increase in intelligence scale in group (A) compared with group (F) meaning that the first group possess a higher degree of intelligence in relation to the second group. This is a very important result ad teachers must posses a high rate of intelligence so as to deal with the pupil in the class and outer the class room.

Researchers from different disciplines studied intelligence, as it may be an indication of good behavior in different position of the daily life, or that intelligent is a potential function of the capability of the person to study easily and solve the problems related to the academic study, or the two functions together. (Gale et al, 2005, Eliza Peth et al 2007)

Table (3) revealed that the investigated cortiso L hormone was significantly increased in group (F) compared with group (A). it is well known that cortisol hormone is marker of stress, physical or emotion, it is reported to reduce in athletes compared to non athletes, when cortisol increased, that mean that the personality is stressed and indicate that the person cannot serve under stress, work amid distraction, while the lesser the cortisol level at rest is an indication that the person or the teacher in the study is suited to work under stress, as he can tolerate stress and work normally in stress situation and is not hesitated.

This agree with researchers (Ting –ju et al, 2008, Ganong (2000)

Ganong (2000) added that cortisol secretion from the adrenal cortex is stimulated by the action of adrenocorticotrophic hormone of the pituitary gland by the action of different stressors including physical, psychological or mental and emotional ones, and that the secretion of cortisol is very important to prepare the person to fight in stress conditions, as cortisol increased glucose level for the vital organs of the body including the brain, because the glucose is the main nutrient of the nervous system to help in energy production in abnormal situation, and different kinds of stresses.

This is also reported by Barrett et al (2010)

Table (3) reported a significant increased in cholinesterase of group (A) compared with group (F) and the cholinesterase enzyme, which is the enzyme which destroy acetylcholine hormone., the increased enzyme is indication of the increased acetyl choline hormone which is a stimulation muscular contraction and marker of the synergy neuromuscular, the more the acetyl choline secretion denote the higher physical capability which are more capable as teachers for teaching skills of athletes for student of physical education and sports. This result is also reported by researchers, that acetyl chioline when secreted at the local area of the end plate, creating a local potential leading to initiation of muscle contraction (Koch, 2003, Rekling et al, 2000, vander Kloot and Molgo, (1994).

Acetyl choline exists largely in small synaptic vesicles, in the terminal buttons of cholinergic neurons. After stimulation acetylcholine must be rapidly removed from the synapse if repolarization is to occur.

The removal accurs by of hydrolysis to choline and acetate, this reaction is catalyzed by the enzyme cholinesterase. Hydrolysis of acetyl Choline by the enzyme cholinesterase explain the changes in sodium conductance and electrical activity leading to synergy neuromuscular and muscle contraction. the more the acetylcholine the more cholinesterase enzyme, the

more the activity of the skeletal muscle and fitness indication [Lee. 2003].

The data reported in table (3) about the results of the computer test capabilities of group (A), group (F) indicated a significant elevated level in group (A) with average degree of 89.8 of C.T, compared with group (F) with average degree of 57.2 of C.T., this result means that group (A) is more capable for the post of physical Education teacher as they are more suitable to work under pressure, work amid distractions, have the speed of decision making power of observation, and higher level of intelligence and memory concentration and synergies of neuromuscular which are very important characteristics of the teachers. These are in accordance with some related studies which used different test to assess teacher candidates to work as physical Education teachers, Asmaa Ahmed Habib (2015), studied targeted efficiency preparatory test to judge the applicants capabilities to allocate teaching physical Education Naif Alromi (2015) test teaching skills on a sample & 150 male and female students to join the division of teaching.

Bin sedique El Hakmy et al (2004) prepared skills basic test for teacher, presented in a meeting held in the city of jizan in KSA, and included a proposed test containing several parameters, as a guide for teachers.

The Egyptian Ministry of Education (2015) also reported testing applicants for the post of teacher for the purpose of teaching in all disciplines.

All the proposed tests were determined for the selection of the most capable teachers in a equal basis for the benefit of the education operation, and to improve education Quality through qualified teachers and using active learning methods instead of classical ones.

From the preceding discussion, it might be able to answer the research Questions "what are the appropriate proposed tests of psyshoBiological and computer capabilities, to assess teacher candidates to work as physical education teachers?

Conclusions:

It may be concluded that:

Psychobiological tests together with computer tests reported in this study are both essential for the candidates proposed for the post of physical Education teachers and the development of those teachers for the sake of the students.

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Recommendations.

It is recommended to introduce psychobiological tests of the study to the proposed computer test capabilities, to be used together to identify the capabilities of the candidates for the post of physical Education teachers.

References

1. Barrett, K., Barman, S, Boitano, s (2010): review of medical physiology McGraw Hill, Lange.
2. Baddeley, A (2003): working memory vatreuneurosci, 4, 829.
3. Chatterjea, M and Shinde R (2006): medical biochemistry jaypee, India.
4. Conlon, R. Hobson, j (1999): understanding the human mind New York, john Wiley.
5. Dash, P, Hebert, A, Runyan, j (2004): A unified theory for system and memory consolidation Brain Res, Brain Res Rev 45:30.
6. Dick, P, katsuyuki, S (2004): Prefrontal cortex and working memory. Curr opin Beurobial. 14, 163.
7. Elizabeth 0., Nancy, M, Alan, K. (2007): Essentials of assessment report writing john wiley, sons, inc. New jersey.
8. Garrett, B (2003): Brain and behavior Stanford: wards worth.
9. Guyton, A and Hall, j (2006): Text book of Medical physiology Elsevier, Saunders, USA.
10. Gale, R. H, Michael, F, Great house, D (2005): An interview with gale roid about the standerd – binet 5. Am. J of psychology, 7, No 3493.
11. Haier, R (1992): intelligence and changes in cerebral glucose metabolic nate following learning intelligence: 16, 415.
12. Hatfield, F. (2013): Fitness the complete guide ISSA, Trainer course, USA.
13. Koch, W (2003): Molecular dissection of neuromuscular junction Trends Neurosc. 26, 335.
14. Lee, C. (2003): Mechanism of action of neuromuscular blocking pharmacol ther 98, 143.
15. Matt Ridley (2001): genome Fourth, estate, London.
16. Manal Shaffee (2009): genteype, hormone, personal traits of sport leadership phD, phys. Educ. Fac. El gezira, Helwan univ.
17. Plomen, R, Chorney, M, Seese, K, (1998): A trixlocus associated with cognitive ability psychological sc. 9,8.
18. Rekling, j, funk, G, Bayliss, D, (2000): synaptic control of motoneuromal excitation, physiol rev 80, 767.
19. Ting –ju, L, chia, W., Tzu, H (2008), the effect of exhausting exercise, on testosterone, Cortisol in callegestudents and athletes, ISHPER – SD congress, japan.
20. Van Derkloot, Molgo, j (1994): Acetylcholine release at neuromuscular junction physiol Rev 74, 899.