

INTERRELATIONS BETWEEN DOMINANT EXTREMITY, TEMPERAMENT TYPE AND BEHAVIORAL STRATEGIES IN THE HIGHER EDUCATION FOREIGN APPLICANTS FROM IRAN

¹Tkachenko Elena Viktorovna, ²Jha Sahil Kumar, ³Rauth Uponsa,
⁴Jha Gautam Kumar, ⁵Kumari Chhaya

¹Candidate of medical sciences, physiology chair assistant
Poltava State medical university

^{2,3,5}Student, International faculty, General Medicine
Poltava State Medical University, Ukraine

⁴Final Year Student, BE Computer Science
Chandigarh University, India

Introduction. Personality individualism study is essential for recognizing yourself, people and your life making more pleasant while study to manage yourself and other people. Scientists divide people for types or groups for this. These groups members possess any similar peculiarities. Many typologies have been created for many years and they continue to be created up to nowadays (O.M. Кокун, 2006).

It is very important to take into account following:

- all personality types are valuable in an equal extent;
- every type possesses its advantages and disadvantages;
- the personality type can not be neither better nor worse;
- the typing does not divide people into intelligent and stupid, healthy and sick;
- the personality type does not determine mental abilities, does not promise success and does not indicate who is adapted to life better and who is adapted worse;
- but the personality type indicates the Ways of the personality reaching one or other results giving the representation about individual cognitive styles;
- the typologies theory only helps to understand better what motives underlie human behavior while so-called behavior styles determining;
- besides one or other typology determines tendency to one or other pathological processes occurrence that has applied character.

Let's discuss some examples of such typologies and interrelations.

One can say not only about Differential Psychology – a science about inter-grouped and intra-grouped psychological varieties created by V.Shtern in 1901, but Differential Physiology (O.M. Волянський, 2004).

E. Krechmer has been trying to establish interrelations between human constitution and tendency to one or other physiological and patho-physiological processes in far 1924. He has stated that the pycnic is tended to maniacal-depressive psychosis, athletic – to epilepsy, asthenic – to schizophrenia. He also has differentiated three main human biotypes: viscerotonics (pycnics), somatotonics (athletics) and cerebrotonics (asthenics) (I.C. Вітенко, Т.І. Вітенко, 2008). U.Sheldon (1940) has differentiated ectomorphic (similar to asthenic), mesomorphic (to athletic) and endomorphic (to pycnic) somatotypes. Rostan (1824) and Sigo (1914) were talking about digestive constitution type, muscular and cerebral one. Later they were related to pycnic, athletic and asthenic types correspondingly.

Character accentuations types (K.Leongard, A.Lichko) are known all over the world and are widely used by psychologists, psychiatrists and physiologists in part. Hypertymic type was found to be tended to manias; dystymic – depressions; cycloid – maniac-depressive conditions; stucking – to phobias, neuroses (of persistent states in part); pedantic type – some schizophrenia types; demonstrative one – to hysteria.

Sexual shade (so-called gender aspect) relates to physiological systems functioning in norm (V. Tsuber et al., 2014) and diseases as well. Girls are more instilled, undergone to hypnosis, conformism. Such disorders as dyslexy and dysgraphia are present in boys more often due to more lateral brain in males because of callosal body dominance in its anterior part with less possibility to develop information interchange between two big hemispheres; on the contrary female bigger callosal body in its posterior part defines more significant information interchange between big hemispheres and both hemispheres bigger involvement in one and the same brain function processing in part speech and voice (E. J. Hunter et al., 2011). Life duration is bigger in women (JE Seifarth et al., 2012). Higher pain threshold (MW Otto, MJ Dougher, 1985), estrogens cardio-protective action (antihypoxic, antiischemic mechanisms, antihypertensive, heart contraction rate modulating, Na-K-ATP-ase function maintaining) (B Cong et al., 2014; B Xue et al., 2013), more significant chromosomal telomeres shortening (and therefore faster consumption) in men (JE Seifarth et al.,

2012) particularly due to bigger smoking rate in males represent only several reasons of it. The more intensive is testosterone (masculinization) level, especially in a woman the bigger is personal predisposal to cardio-vascular diseases and more subjective complaints while going in for Sports (RP Juster, S Lupien, 2012). “Female” and “male” diseases, other diseases peculiarities in both-sexed people (C Maric-Bilkan, MB Manigrasso, 2012; WH Wehrmaher, 2012), sexual hormones sexual and non-sexual functions, impact on metabolism (X Wang et al., 2011), their receptors (SC Manogalas et al., 2013), separately alpha- and beta- (ME Hogg et al., 2012), stimulators and inhibitors, interaction to suprachiasmatic hypothalamic nucleus comprising natural biological hours (M Bailey, R Silver, 2014), aromatase role and pathology, in Sport (CA Rüst et al., 2013), ovarial-menstrual cycle (R Nagar et al, 2013), menopause (ethno-age typological aspect) (BV Howard, JE Rossouw, 2013), systemic function indices changing during it (HM Choi et al., 2013) pregnancy and contraception, physiological and pathological labors, abortions, breast cancer in men and women, female hyperandrogenism, infertility in men and women and counseling at it particularly the psychological one, sexual hormones and their inhibitors prescription at sexual and systemic pathology (GM Rosano et al., 2000) - this is incomplete list from all actual and studied topics and questions of gender typological aspect. There exists a whole Medicine branch – Gender Medicine (JF Reckelhoff, 2012). The scientists introduced the term “gender-specific body” particularly due to mentioned female brain less expressed asymmetry comparatively to the male one (E Annandale, A. Hammarström, 2011). Interestingly that female low tolerance to orthostasis allows saying about arterial pressure specific regulative mechanisms in women (JN Barnes, 2013). With other words, female vessels are undergone to big difficulties while constricting, women possess less stroke volume (MM Wenner et al., 2013). Men with lower testosterone level are tended to suffer from heart-vascular pathology and they can get sick even at earlier age stages than women (R Maranon, JF Reckelhoff, 2013). Androgens are essential for endotheliocytes renewal especially at cardiac-vascular pathology (AM Traish, A Galoosian, 2013), androgen deficiency in men can result in atherosclerosis which define predisposition to stenocardia, cardiosclerosis, myocardial infarction and stroke.

Following data are known better. Greek (or Greek-Arabic-Persian) medicine is based on nature for elements taking into account: air, water, fire and ground. Correspondingly, one can differentiate 4 main materias in a human organism every from which corresponds to one of Nature elements (blood, lymph, bile, black bile). These elements combination defines peculiarities and human behavior type. This idea lied on the background of the temperaments first classification reported by Hippocrate. Father of Medicine considered that human vital activity level depends on correlation of 4 liquids circulating in the organism – blood (sanguis), bile (chole), black bile (melane chole) and phlegm.

These liquids mixture defines every organism individual variety. Mixture sounds from Greek like “temperament”. Individuums classification was named as temperaments classification from this. And it is known nowadays as Hippocrate study about 4 temperaments types. It includes choleric, sanguinic, phlegmatic and melancholic by bile, blood, mucus and black bile dominance. This classification can be applied both to animals and people.

Ivan Petrovitch Pavlov has created the theory of “human” types of temperament and has distinguished artistic (right-hemisphered), mental (left-hemisphered) and mixed types.

Iranian scientists pay much attention to temperament study.

There are gastric and hepatic temperament at hypercholesterolemia (some patients showed hepatic temperament but all of them had gastric temperament) (M Emtiazy et al, 2012). Twelve stomach distemperaments were differentiated in Iranian Traditional Medicine and result into stomach diseases (M Alizadeh et al., 2017). Iranian scientists use questionnaires of Mojahedi temperament and queendom communication skill and found the significant relationship between temperament and communication skills while suggesting that attention focus should be directed to the students’ temperament and that temperament modification must be planned with the aim to increase the students’ communication skills [E Banaee et al., 2019]. Rather interesting temperaments classification was proposed by Persian doctors (F Hakimi et al., 2019). It refers to wetness. In part moisture in the body has four general categories based on the moisture quality, nature, function and location. Moisture function differs dependently on its quality. Persian doctors believe that understanding the wetness concept, its various types as well as related signs or symptoms represent step toward health promotion at prevention all stages, diagnosis and treatment. Hot and cold temperaments can be useful in sportive medicine: the research on Iranian students volunteers demonstrated that temperament type by itself did not influence on anaerobic power indices while sodium bicarbonate supplementation improved anaerobic power in hot-tempered students as well as reduced significantly fatigue index in cold-tempered people in bigger extent comparatively to the hot-tempered group (MA Safari et al., 2019). There is a research about physiological indices peculiarities in Iranian different-tempered non-athletic men (S Vahedi et al., 2018). Warm-tempered people were tended to have a relatively higher power, better anaerobic power than the cold-tempered ones while the cold-tempered had higher threshold than those who were warm-tempered men from Iran aged from 18 to 22 years (M Rahati, 2018).

Mizaj classification is also paid great attention in part in gastric health maintaining (R Mokaberinejad et al., 2019).

As a whole, psycho-physiological development (both of sensory-perceptive processes and higher psychical functions) has complicated character and works according to heterochronism law. The term “heterochronism” has been defined as complicated combination in evolutionary and involutory processes that depends both on human life social-historical conditions and on his own activity (working, communicative, gnostic) distinguishing features.

Age aspect of organism ontogenetic formation and changing represents differentiation important principle.

One other important aspect in the personality differentiation represents interhemispherical asymmetry individual profile taking into account. It is realized on human being belonging to sinister or dexter. It is known that sinisters represent from 10 to 15% of human population (95-98% of population in USA and Japan is left-handed) and their number is increased (OB Пивоваров, 2007). Sinisters population is also non-homogenous and includes real, hidden-real and unreal sinisters (AA Дроздовская, 2002). Sinisters are characterized by their own physiological and pathological peculiarities (OB Ткаченко, 2007), “left diseases”, “the lefty syndrome” (OC Чабан та ін., 2008). Sinistrality represents asymmetry expression at population level and is studied nowadays by scientists of world many countries, both theoreticians and clinicians. Even devices for sinisters are started to be created in the world, in part, in Turkey (N Sandalli et al., 2005).

First this characteristic investigative methods has been established in the USA in the 60th years of last century. “Locus of control” scale of J.Rotter (1954) belongs to one of the most known among them. People are more internal (with internal locus of control or tendency to think that person is responsible more for his activities results) in the West than in the East where people are more external (id est they think that external factors influence more on the person's activity results than the human being himself). By Iranian scientists data Holy Quran locus of control is the middle of external (outside) and internal (inside) (M Amdi Mazaheri, Q Darzi, 2013).

One can differentiate coping and avoiding behavioral strategies.

WORK AIM

Studying personality neuro-dynamic peculiarities (temperament type, extra-introversion) as well as personality cognitive style some parameters (locus-control, reaction styles in complicated life situations) assessment dependently on interhemispherical asymmetry individual profile (dexterity-sinistrality).

WORK TASKS

1. To assess interhemispherical asymmetry individual profile in the investigated people group: number of dexters, sinisters (real, hidden and unreal) as well as ambidexters.
2. To determine temperament type in the investigated group students.
3. To study the way of interaction with surrounding world and energy direction main locus (to his/her internal world or to external world) – introversion/extraversion.
4. To determine temperament type dependently on the investigated people leading extremity.
5. To determine temperament type in dependence on sinistrality character (in real, hidden and unreal sinisters).
6. To determine extraversion-introversion in dexters, sinisters (real, hidden and unreal) as well as ambidexters.
7. To assess personality cognitive style parameters:
 - locus-control (internal and external);
 - reaction styles in complicated life situations (coping and defense).

OBJECT

63 students of UMSA, fellows (50) and girls (13), 19-27 years in age.

THE INVESTIGATION METHODS

1. *Interhemispherical asymmetry assessment:*

- dominant extremity;
- dominant finger;
- dominant eye;
- Napoleon's pose;
- probe with applauding;
- anamnesis (sinistrality among close relatives, hemispheres and extremities traumas in the investigated person) – for sinistrality type determining.

2. *Questionnaire for human behavior assessment in complicated situations* (the investigated person had to put degrees for every statements pair) [Кондрашихина О.А. Дифференциальная психология: Учебное пособие.-К.: Центр учебной литературы, 2009.-232с.].

Defence	Coping
To follow only one line	To change many variants up to the most optimal one finding out
I am inside my actual worryings	I believe that I can solve the problem even if I can not see the solving at once
I am waiting that everything will be solved without my actions	I know that I can leave the complicated situation due to my own activity
Everything in my Destiny is out of my will	I recognize distinctly from where my misfortunes are originated from
All surrounding seems unreal to me	I feel all life with all its shades
It is rather difficult to me to assess up to what extent the appeared situation is unfavorable to me	It is not difficult to me to assess the situation importance and complicity for myself
The most important to me is to keep the comfort sensation	I will act even if it disturbs my comfort temporarily
My own thoughts pervert real situation	I find provings that my representations about one or another situation coincides to real events
I can hardly suppose the results of my solutions	I can imagine my solutions results rather distinctly while solving
I prefer closing eyes to everything in a threatened situation	I strive to “look in the complicated situation eyes”

Then the investigated people are proposed to count the degrees sum and to make the results in the scale DEFENCE 10__20__30|___40___50 COPING

The degree sum less than 30 testify to defense style dominance, more than 30 – coping style.

External-internal locus-control. *Externality* - human being tendency to consider external factors (God, Destiny, occasion, other people) responsible for activity results. *Internality* - human being tendency to consider human being own abilities and forces responsible for his activity results.

THE INVESTIGATION RESULTS

The performed investigation results demonstrated that the students distribution on the interhemispherical asymmetry profile was as follows as: real sinisters – 25 people (39,6%, $p < 0,05$); hidden sinisters – 10 (15,8%, $p < 0,05$); unreal sinisters - 15 (28,8%, $p < 0,05$); dexters – 10 (15,8%, $p < 0,05$); ambidexters – 3 (4,8%, $p < 0,05$).

The distribution on temperament types were as follows as: choleric – 8 (12,6%, $p < 0,05$); sanguinics – 19 (30,1%, $p < 0,05$); phlegmatics – 6 (9,5%, $p < 0,05$); melancholics - 30 (74,89%, $p < 0,05$).

We have performed the assessment of people with a various temperament taking into account the dominant extremity (the table 1).

Table 1 The temperament type in the UMSA students dependently on the interhemispherical asymmetry profile, n=63

Sinisters, n=50				Dexters, n=10				Ambidexters, n=3			
cho-le-rics	san-gui-nics	phleg-matics	me-lan-cho-lics	cho-le-rics	san-gui-nics	phleg-matics	me-lan-cho-lics	cho-le-rics	san-gui-nics	phleg-matics	me-lan-cho-lics
6	13	4	27	1	6	2	1	1	0	0	2
$p < 0,05$											

As the results received testify to, the **sinisters distribution** was as follows as: 27 melancholics (54%, $p < 0,05$), 13 sanguinics (26%, $p < 0,05$), 6 choleric (12%, $p < 0,05$), 4 phlegmatics (8%, $p < 0,05$).

The **dexters distribution** was as follows as: 6 sanguinics (60%, $p < 0,05$), 2 phlegmatics (20%, $p < 0,05$), 1 choleric (10%, $p < 0,05$), 1 melancholic (10%, $p < 0,05$).

Ambidexters distribution: 2 melancholics (66%, $p < 0,05$), 1 choleric (34%, $p < 0,05$), no sanguinics, no phlegmatics.

Thus, melancholics were prevalent in the sinisters population, sanguinics – in the dexters one while melancholics were in the biggest amount among ambidexters at the sanguinics and phlegmatics absence.

The next investigations stage has been dedicated to the temperament types' distribution dependently on the interhemispherical asymmetry individual profile (the table 2).

Table 2 The UMSA students temperament type dependently on the interhemispherical asymmetry individual profile, n=63

Real sinisters, n=25				Hidden sinisters, n=10				Unreal sinisters, n=15				Dexters, n=10				Ambidexters, n=3			
ch	s	ph	m	ch	s	ph	m	ch	s	ph	m	ch	s	ph	m	ch	s	ph	m
4	8	4	9	0	2	0	8	2	3	0	10	1	6	2	1	1	0	0	2
$p < 0,05$																			

Note: ch – choleric, s – sanguinics, ph – phlegmatics, m – melancholics.

We analyzed only the sinisters population structure because the one of the dexters and ambidexters has been described by us after the table 1.

The **real sinisters** distribution: 9 melancholics (36%, $p < 0,05$), 8 sanguinics (32%, $p < 0,05$), choleric (16%, $p < 0,05$), 4 phlegmatics (16%, $p < 0,05$).

The **hidden sinisters** distribution: 8 melancholics (80%, $p < 0,05$), 2 sanguinics (20%, $p < 0,05$), absent choleric, absent phlegmatics.

The **unreal sinisters** distribution: 10 melancholics (66%, $p < 0,05$), 3 sanguinics (20%, $p < 0,05$), 2 choleric (14%, $p < 0,05$), no phlegmatics.

Thus, we have received melancholics dominance also at the division on the subgroups.

As the performed work results have demonstrated, 63 investigated students have been divided into: 24 extraverts (38%, $p < 0,05$), 32 introverts (57%, $p < 0,05$), 7 ambiverts (5%, $p < 0,05$).

We got interested what will be the extra-introversion distribution dependently on the interhemispherical asymmetry indexes individual profile.

Table 3 Extra-introversion in the UMSA students dependently on interhemispherical asymmetry individual profile, n=63

Real sinisters, n=25			Hidden sinisters, n=10			Unreal sinisters, n=15			Dexters, n=10			Ambidexters, n=3		
e	i	a	e	i	a	e	i	a	e	i	a	E	i	a
10 (40%)	12 (48%)	3 (12%)	2 (20%)	7 (70%)	1 (10%)	5 (33%)	8 (53%)	2 (13%)	6 (60%)	3 (30%)	1 (10%)	1 (13%)	2 (34%)	-
$p < 0,05$														

Note: e – extraverts, i – introverts, a – ambiverts

Thus, introverts were prevalent among real, hidden and unreal sinisters as well as ambidexters while extraverts – among the dexters.

Next stage of our work was dedicated to people reaction type in hard life situations. As it is known, one can differentiate 2 styles of reaction to the situation: coping; defense, escape, avoiding.

The results received are represented in the table 4.

Table 4 The reacting type in the UMSA students in the hard life situations dependently on the interhemispherical asymmetry individual profile

Real sinisters, n=25		Hidden sinisters, n=10		Unreal sinisters, n=15		Dexters, n=10		Ambidexters, n=3	
De-fense	Coping	Defense	Coping	Defense	Coping	Defense	Coping	Defense	Coping
17 (68%)	8 (32%)	9 (90%)	1 (10%)	12 (80%)	3 (20%)	2 (20%)	8 (80%)	2 (66,6%)	1 (33,4%)
p<0,05									

As a whole, 37 people from 63 preferred defense strategy under the hard conditions and 26 people – coping. Sinisters and ambidexters preferred defense more while the dexters – coping.

We assessed and compared also the locus-control in the dexters, sinisters and ambidexters (the results are represented in the table 5). Table 5

Locus-control in the UMSA students dependently on the asymmetry profile

The asymmetry profile	External locus	Internal locus
Dexters, n=10	1 (10%)	9 (90%)
Sinisters, n=50	45 (90%)	5 (10%)
Ambidexters, n=3	3 (100%)	-
p<0,05		

As the statistic processing results given in the table 5 testify, the sinisters (especially) and dexters preferred the internal locus-control. All ambidexters followed the external locus-control at the internal locus-control followers' absence among them.

CONCLUSIONS

1. Students (63 people) distribution on interhemispherical asymmetry profile was as follows as: real sinisters – 25 (39,6%, p<0,05), hidden sinisters – 10 (15,8%, p<0,05), unreal sinisters - 15 (28,8%, p<0,05), dexters - 10 (15,8%, p<0,05), ambidexters - 3 (4,8%, p<0,05).
2. Students distribution on temperament types: choleric - 8 (12,6%, p<0,05), sanguinics - 19 (3,01%, p<0,05), phlegmatics - 6 (9,5%, p<0,05), melancholics - 30 (74,89%, p<0,05).
3. 24 extraverts (38%, p<0,05), 32 introverts (57%, p<0,05) and 7 (5%, p<0,05) ambiverts were in the investigated group.
4. Melancholics were dominant among sinisters, sanguinics – among dexters. Melancholics were also dominant among ambidexters at sanguinics and phlegmatics complete absence.
5. We have received also melancholics dominance at sinisters division into groups.
6. Introverts were dominant among real, hidden and unreal sinisters as well as among ambidexters while extraverts – among dexters.
7. Defence tactic was dominant among sinisters and ambidexters while coping – among dexters.
8. Sinisters and ambidexters had mainly external locus-control while dexters – the internal one.

Practical recommendations. The work performed can help at the personality individualization study. Differential Psychology and Psychophysiology place rather important position among the Sciences about Human Being nowadays. In part, in Pedagogy, Logopedy, Pediatrics, Biology and Chronobiology, Physiology and Pathophysiology, Psychology, Chronomedicine, Pharmacology, Sport Medicine.

References

1. Кокун ОМ. Психофізіологія. Київ, 2006.
2. Волянський ОМ. Визначення індивідуальної норми церебральної гемодинаміки у людини. Фізіологічний журнал.2004; (6):101-106.
3. Вітенко ІС, Вітенко ТІ. Основи психології.-Видання друге, перероблене і доповнене.-Вінниця: НОВА КНИГА, 2008.
4. Tsuber V, Kadamov Y, Tarasenko L. Activation of antioxidant defenses in whole saliva by psychosocial stress is more manifested in young women than in young men. 2014. PLoS One. Open Access Journal; 9(1219). Article number e115048.
5. Hunter EJ, Tanner K, Smith ME. Gender differences affecting vocal health of women in vocally demanding careers. Logoped Phoniatr Vocol. 2011; 36(3):128-136.
6. Seifarth JE, McGowan CL, Milne KJ. Sex and life expectancy. Gend Med.2012;9(6): 390-401.
7. Otto MW, Dougher MJ. Sex differences and personality factors in responsiveness to pain. Percept Mot Skills.1985;61(2):383-390.
8. Cong B, Xu Y, Sheng H, Zhu X, Wang L, Zhao W, Tang Z, Lu J, Ni X. Cardioprotection of 17β-estradiol against hypoxia/reoxygenation in cardiomyocytes is partly through up-regulation of CRH receptor type 2. Mol Cell Endocrinol.2014.382(1):17-25.
9. Xue B, Johnson AK, Hay M. Sex differences in angiotensin II- and aldosterone-induced hypertension: the central protective effects of estrogen. Am J Physiol Regul Integr Comp Physiol.2013;305(5):459-463.
10. Seifarth JE, McGowan CL, Milne KJ. Sex and life expectancy //Gend Med.-2012 Vol.9, N.6.-P.390-401.
11. Juster RP, Lupien S. A sex- and gender-based analysis of allostatic load and physical complaints. Gend Med.2012;9(6):511-523.
12. Maric-Bilkan C, Manigrasso MB. Sex differences in hypertension: contribution of the renin-angiotensin system. Gend Med.2012; 9(4):287-291.
13. Wehrmacher WH. Women and heart disease: shifting the paradigm in the 21st century. Gend Med.2012;9(5):385-386.

14. Wang X, Magkos F, Mittendorfer B. Sex differences in lipid and lipoprotein metabolism: it's not just about sex hormones. *J Clin Endocrinol Metab.*2011; 96(4):885-893.
15. Manolagas SC, O'Brien C.A, Almeida M. The role of estrogen and androgen receptors in bone health and disease. *Nat Rev Endocrinol.*2013;9(12):699-712.
16. Hogg ME, Vavra AK, Banerjee M.N, Martinez J, Jiang Q, Keefer LK, Chambon P, Kibbe M.R. The role of estrogen receptor α and β in regulating vascular smooth muscle cell proliferation is based on sex. *J Surg Res.*2012;173(1):e1-10.
17. Bailey M, Silver R. Sex differences in circadian timing systems: Implications for disease. *Front Neuroendocrinol.*2014;35(1):111-139.
18. Rüst CA, Knechtle B, Knechtle P, Rosemann T, Lepers R. Sex differences in ultra-triathlon performance at increasing race distance. *Percept Mot Skills.*2013;116(2):690-706.
19. Nagar R, Msalati AA. Changes in serum PSA during normal menstrual cycle. *Indian J Clin Biochem.*2013;28(1):84-89.
20. Howard BV., Rossouw JE. Estrogens and cardiovascular disease risk revisited: the Women's Health Initiative. *Curr Opin Lipidol.*2013;24(6):493-499.
21. Choi HM, Stebbins CL, Nho H, Kim MS, Chang MJ, Kim JK. Effects of Ovarian Cycle on Hemodynamic Responses during Dynamic Exercise in Sedentary Women. *Korean J Physiol Pharmacol.*2013;17(6):499-503.
22. Rosano GM, Graziottin A, Fini M. Cardioprotective effects of ovarian hormones and the HERS in perspective. *Maturitas.*2000;(34 Suppl 2):S.3-10.
23. Reckelhoff JF. The end of an era: the final chapter of Gender Medicine. *Gend Med.*2012;9(6):389.
24. Annandale E, Hammarström A. Constructing the 'gender-specific body': A critical discourse analysis of publications in the field of gender-specific medicine. *Health (London).*2011;15(6):571-587.
25. Barnes JN. Blood pressure regulation in women - differences emerge when challenged by orthostasis. *J Physiol.* 2013;591(Pt 9):2239.
26. Wenner MM, Haddadin AS, Taylor HS, Stachenfeld NS. Mechanisms contributing to low orthostatic tolerance in women: the influence of oestradiol. *J Physiol.*2013;591(Pt 9): 2345-2355.
27. Maranon R, Reckelhoff JF. Sex and gender differences in control of blood pressure. *Clin Sci (Lond).*2013;125(7):311-318.
28. Traish AM, Galoosian A. Androgens modulate endothelial function and endothelial progenitor cells in erectile physiology. *Korean J Urol.*2013;54(11):721-731.
29. Emtiazy M, Keshavarz M, Khodadoost M, Kamalinejad M, Gooshahgir SA, Bajestani HS, Dabbaghian FH, Alizad M. Relation between Body Humors and Hypercholesterolemia: Am Iranian Traditional Medicin Perspective Based on the Teaching of Avicenna. *Iran Red Crescent Med J.*2012;14(3):133-138.
30. Alizadeh M, Khadem E, Aliasl J. Diagnosis Protocol of Stomach Distemperament for Clinical Practice in Iranian Traditional Medicine: A Narrative Review. *Iran J Public Health.*2017; 46(7):877-881.
31. Banaee E, Pouladi Sh, Bahreini M, Tahmasebi R, Relationship between temperament and communication skills of nursing and midwifery student of Bushehr University. *Journal of Islamic and Iranian Traditional Medicine.*2019;9(4):297-307.
32. Hakimi F, Mokaberinejad R, Nazem E, Tansaz M, Choopani M, Ilkhani R, Chaichi Raghimi M, Jafari P. The concept of wetness and its kinds in Persian medicine. *Journal of Islamic and Iranian Traditional Medicine.*2019;9(4):321-322.
33. Safari MA, Koushkie Jahromi M, Khormae F, Salehi A. The Effect of Temperament Type and Sodium Bicarbonate Supplementation on Anaerobic Power and Fatigue Index. */Sport Physiology & Management Investigations.*2019;11(1):157-170.
34. Vahedi S, Rahati M, Attarzadeh Hoseini SR, Fathei M. Study of physiological indices in non-athletic men with different temperaments. *Journal of Islamic and Iranian Traditional Medicine.*2018;9(3(35)):263-276.
35. Rahati M. Comparison of some of the performance indicators of physical fitness in warm and cold temperament men. *Journal of Islamic and Iranian Traditional Medicine.*2018; 9 (2(34)):143-150.
36. Mokaberinejad R, Parsa E, Khodadoost M, Zareiyani A, Mojahedi M, Kargar Sharif Abad F, Gorji Z, Saeidi Borojeni A. A review of the recommendations for maintaining gastric health from the perspective of Persian medicine. *Journal of Islamic and Iranian Traditional Medicine.*2019;10(1):25-36.
37. Пивоваров ОВ. Розробка лікувально-профілактичних заходів для учнівської та студентської молоді з ознаками сіністральності: Монографія /Під ред. проф. В.Г. Самохвалова.-Х.: ХНМУ, 2007.
38. Дроздовская АА. Биолокационное определение типов леворукости с помощью биомеханической трёхдипольной модели биополя человека. Эниология XXI века: Материалы IV Международного конгресса (9-14 сентября 2002г.). Одесса: Одесский Национальный университет им. И.И.Мечникова. Ассоциация эниологов, 2002: 98-102.
39. Ткаченко ОВ. Особливості реології та еритроцитарної ланки гемостазу в симетричних регіонах кровообігу у тварин та людей: Автореферат дис...к.м.н.-Вінницький національний медичний університет ім.М.І.Пирогова.-Вінниця, 2007.
40. Чабан ОС, Гуменюк ММ, Вербунко ВА. Нейропсихологія (лекції та додатковий матеріал курсу).Тернопіль, 2008.
41. Sandalli N, Cildir S, Guler N. Clinical investigation of traumatic injuries in Yeditepe University, Turkey during the last 3 years. *Dental Traumatology.*2005; 21(4):188-194.
42. Amdi Mazaheri M, Darzi Q. Locus of control in Quran's view, with emphasis on concept of determinism & free will. *Interdisciplinary Quranic Studies.*2013;4(1):113-126.