



## ❖ VARIA

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### ANTI-AGING

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#### Abstract

In this research, a literature study was conducted on what possible positive effects of; the most talked about subject today, the anti-aging applications have on people.

Aging is changes that the years bring on to the body. People have been trying for centuries to prolong life and searched for an elixir to do so. Today, scientists aim to increase human life to over 100 years of age with anti-aging applications. The purpose of this study is to try to find an answer to the question why doesn't everyone age equally.

*Key words:* anti-aging, people.

#### Introduction

For a long time, people have searched for an elixir to prolong life (Yu et al. 1998). It is said that Alexander the Great went to India to search for the mythical river of immortality. Over time, this search continued to become a dream for the people (Yilmazturk, M.).

Immortality, not aging and eternal youth have always been the biggest dreams of people. Maybe you know someone who looks 40 even though he/she is 60 years old. Some people look younger than their age. Physically and mentally, they are as active and strong as much younger people because these people have succeeded in slowing down the aging process.

#### Aging

Aging is changes that the years bring on to the body. Aging is a life process that begins with birth and ends with death but the actual wear and tear on tissues and organs start during puberty when growing and development completes (Yu, 1999).

For example, fibroblasts cell which is mainly produced in human body may survive up to 150 years under the convenient laboratory conditions. It will be also possible to live such a long time for people if these suitable circumstances are prepared (Yu, 1999).

Nowadays, scientists who are engaged on "anti aging" subject, are dealing with the question of increasing people's life on top of the hundreds years of age. Undoubtedly, it is aimed these people be healthier and active. In the 1960s, while the average age limit was 49 in Turkey. In the 2000s, this age limit rose to 69 years. On the base on these statistics, it will be possible to say people's life gone up by 20 years last 40 years.

#### Why doesn't everyone age equally?

Because not everyone carries the same genetic heritage Moreover, everyone nourishes and lives differently. It is known that even identical twins from the same egg age at different rates from each other when they live under different geographical conditions. There are three types of ages in humans:

1. Chronological age
2. Biological age
3. Psychological age

We can divide the elderly into three periods in chronological order:

- Age 65–74 Younger elder
- Age 75–84 Middle age
- 85 and above Advanced age (Yu, 1999)

#### *Changes in human body organs and systems in the elderly people are explained as below;*

*Some certain changes are happened in aging body, these are;*

**Cardiovascular System:** The heart begins to beat, blood pressure rises, rhythm disturbances occurs and around the heart oil production begins. Moreover, oils and calcium are accumulated in artery vascular, it increases hardness of vascular and also causes to rise diastolic pressure.

**Respiratory System:** Lungs capacity decreases, the process of combining with oxygen and the blood is reduced. Increase the risk of breathing difficulties and bronchitis.

**Sexual And Excretory System:** Reduction, drying and shrinking in the sexual region, sexual functions becomes weaker. Reduced blood flow to the kidneys. Increases the risk of prostate diseases in men.

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**Digestive System:** Loses in teeth, chewing function slows down, digestive functions slow down. Nutrients absorption gets worse.

**Sense Organs:** Ability to taste is disrupted and vision and hearing acuity is reduced. Tears get dry and the eye color pales.

**Skeletal and Connective Tissue:** Body bone mass decreases. The bones course towards osteoporosis starts. Muscle mass and strength decrease. The height of the cartilages between the vertebrae decrease due to the reduction of the amount of water within the disks and the spine gets bent gradually. The height gets shortened over time.

**Nervous System:** More than 30,000 neurons (nerve cells in the brain) die every day, thus the number of brain cells gradually decrease and the weight of the brain decrease as well. As a result of this, weakening of memory occurs along with elongation of time to react against effects. Forgetfulness and environmental relationships being to decrease over time. Risk of developing Alzheimer's disease double every five years after the age of 65.

**Skin Texture and Hair:** Skin becomes dry, its flexibility and sweating capacity decrease and beings to wrinkle over time. Hair starts to turn gray and thin out.

**Other:** Breasts gets smaller and sags because the tissues have aged and have lost their sensitivity over time. Insomnia starts. Communication with people around is disrupted and the person becomes withdrawn/introverted and becomes more and more quarrelsome with the people around (Palozza, 1998). Protective measures that needs to be taken with the elderly:

- Quit smoking and alcohol and increase physical activity (exercise)

### Free Radicals

Free radicals can be considered as molecules with impaired electron balance. In order to find balance again, they attack other molecules and either receives or gives electrons. Thus, the attacked molecules become free radicals and with the chain reaction, hundreds of molecules in the body undergo change every second.

If the attacker molecules are seeking to complete the deficiency, they attack the proteins, fatty acids and even genetic agent DNA and damage them. Every cell in our body takes a stand against approximately one-hundred thousand attacks per day. Most of the damage occurred in the cells is repairable, however, some are impossible. Therefore the process of aging accelerates in all the tissues and prepares the base for the formation of many diseases (cancer, cardiovascular diseases, Alzheimer's Parkinson's, rheumatoid arthritis, diabetes).

Factors that increase the formation of free radicals; ultraviolet rays, excessive food consumption, surgeries, radiation, drugs, cigarettes, inflammations, intensive sports, lack of antioxidants, dietary/environmental chemicals and stress. (Yılmaztürk 2005).

### ANTI-AGING

The anti-aging means "against aging". As a medical term, we can characterize anti-aging as taking active measures or preventive medicine. The anti-aging is applied for the purposes of slowing down the aging process as much as possible and to enable the whole body to age proportionally and in a healthy way. Renewing the skin cells and connective tissues, balancing the hormonal imbalances in men and women separately, increasing sexual stamina and health, early diagnosis of diseases that may occur as a result of aging and taking precautions are the main objectives of anti-aging applications (Kavas, 2003; Civan et al. 2010).

During the anti-aging application, diseases that people may catch later in life, and hormones and the substances in the body are all identified and balanced. The diagnosis of anti-aging is particular per person. It first starts with a detailed consultation service and laboratory tests and then offers variety of possibilities for the measurement of aging-specific parameters (Rabe and Strowitzki, 2001).

There are many causes of aging but the most important three factors can be controlled to a large extent: Free radicals, reduction of hormones and unhealthy living. You can maintain your youth by declaring war against these factors.

### Benefits of Anti-Aging Applications

**Benefits of anti-aging application can be summarized as below:**

- Increases the grip function, memory and concentration.
- Help overcome the aggression in old age, sleep impairment.
- Regulate the metabolism and increases the level of energy.
- Make person feel energetic and fit.
- Reduces the amount of fat in the body by 14.8%.
- Increasing muscle mass at rate of 8% and increases physical strength and condition.
- Help increase sexual power again.
- Raises the exercise capacity and physical activity. Improve the shape of the body.
- Raises the status of mood and increases capable of solving problems coping with complete favor swings, provide high morale.
- Regulates blood flow in the body. Lowers the level of cholesterol. Reduces LDL (bad) cholesterol, increases HDL (good) cholesterol.



Normalize lipid levels and increases mineral density in bones.

- Strengthening the immune system that may occur in old age and protect human body for illnesses.
- After injury or surgical interventions, reduces the risk of infection and boiling and textures rejoin more quickly.
- Corrects the skin that thin, wrinkled and dry in old age. The skin becomes thicker, elastic and stretched. With other expression is became "Young Looking" (Klentze 2001).

### Essential Elements of the Anti-Aging Treatments Antioxidant Interventions

The cellular mechanism of the oxidative damage caused by the free radicals have been documented with numerous experimental evidence. In addition to this, with free radical research, it was found that, biologically, many reactive oxygen species (ROS) and reactive nitrogen species act as important cellular regulators/stabilizers within the cellular metabolisms that are based on normal redox. Dual function effects of the ROS and RNS and their stabilizing roles on the redox balance are much more than expected. Most of the studies are of the same opinion with the concept that the age-related oxidative damage of the cellular DNA during aging may lead to redox imbalance which results in disruption of the cellular stabilization process of the proteins and the lipids. Therefore, it makes sense to wait for the possibility that reducing the antioxidants along with the cellular components that were damaged oxidatively may repair the age-related damage and the synergistical interaction of the life-shortening pathogenesis (Yu 1996, Sack et al 1996). Due to its protective feature, feeding the various antioxidants was one of the first initiative options that was used. According to the theory of oxidative stress associated with aging (Yu, 1996), usage environment of the antioxidants is based on reducing the oxidative wounds and slowing down the aging process. Unfortunately, there was no definitive conclusion about the effectiveness of the anti-biological aging movement because there was no report about biological and pathological changes in many studies and that death was used as the end-point (Kitani et al 1993, Civan and Cakmakci 2010).

### Hormonal Interventions

Modern approaches towards the anti-aging interventions have tied aging to the diminishing hormone levels and based on this belief, they have conducted experiments in order to re-supply the missing hormones. Called the "brown-sequard elixir" which are extracts prepared with sheep testicles, the Brown-sequard experiments with self-injections claim these types of imaginations (Walford, 1983).

Hormonal Intervention was one of the most commonly used treatments in 1990s in order to weaken

many conditions related to age. Using the growth hormone as an anti-aging measure, in order to prevent the loss of lean body mass and immune functions that occur with age, has created high hopes (Marcus and Hoffman, 1998). Other popular hormones are estrogen, testosterone (Tenover, 1992; Morley, 1993), Melatonin and DHEA.

### Growth Hormone

The current popularity of the grown hormones which are agreed by the people and shared amongst the scientists can be found in real studies of Solomon, with deficient subjects, related to the beneficial effects of the growth hormone supplementation on the lean body mass and body composition (Salomon et al, 1989). In a study conducted by Rudman and colleagues (1991), they gave growth hormones, as an anti-aging measure, to men over the age of 60 with the expectation that the supplementation of growth hormone will repair the decline of lean body mass within the increasing adiposis that is related to age and they found a significant progress as a result of 6 months of treatment (0.03 mg/kg body weight three times a week). Researchers have reported a 4.4% decrease in age mass, 7.1% increase in skin thinness and 8.8% increase in a lean body (Marcus and Hoffman, 1998).

### Estrogen

Estrogen therapy is known as one of the most successful hormonal intervention in specific women depending on aging to slow their bone loss, in addition it is known much more than other hormonal intervention due to a long history of research. Estrogen to reduce the risk of developing Alzheimer's disease vascular dementia or cognitive functions post menopause in women in ageing-specific, the other potential benefits of the new studies suggested more promises. (Birge 1998, Yaffe et al 1998). It is also known as a heart-protective estrogen, has an ability to increase the plasma HDL (Sullivan 1996).

A powerful vasodilator which is much more widely available for transactions that aging can have calculations for approximately 30% of heart protection estrogen and it shows estrogen with lipid changes with accounts of nitric oxide synthesis up-regulation (Nekooeian and Panz 1998). Therefore, if studies and the adverse effects with other hormonal interventions are downgraded, the future of estrogen intervention could be promising in terms of aging studies (Barrett-Corner 1998).

### DHEA Story

During adulthood, levels of dehydroepiandrosterone (DHEA) which is one of the highest androgenic steroids gradually decrease with age. Physiological roles of the DHEA still are not well-defined.

Regardless of this uncertainty, it has increased hope thanks to its preventive effect as a popular anti-aging factor against many degenerative conditions



related to age such as cognitive impairment, osteoporosis, weakening of the immune system and cancer (Han et al 1998, Inserra et al 1998, Carney et al 1991, Sves and Porter 1998). When most of the evidence on the reinforcement effectiveness/efficiency is based on the growing studies, it should be paid attention that a very few of them are based on human studies, therefore direct application on humans is much less reliable.

All the data collected so far about the efficiency of the DHEA in human subjects have shown variable results. From these results, would the brain synthesize the DHEA for example? What is the exact location or locations of the DHEA movement? Does the brain have DHEA receptor? Many important questions such as these require more systematic research on the brain. The extensive studies using both animals and human subjects are important in terms of determining the validity of the DHEA before accepting it as a serious anti-aging measure.

### Melatonin

Another hormone that with its popularity rapidly increasing the public demand is melatonin. It is a pineal gland hormone and is secreted in a circadian (24-hour rotation) method. Its production gradually declines and becomes age-related. In a study on aging, melatonin was seen as little indirect because it is associated with a neurotransmitter which has nothing to do with aging when compared to the circadian (physiological rhythms related to the 24-hour rotation of the earth) rhythm which is the main function of its scientific production and the other similar hormones.

Therefore, a critical question must be asked, in good faith, about a physiological structure for the purposes of creating an anti-aging measure. For example, how does the change in circadian rhythm cause a move that delays aging? Although there are some claims about the ability of melatonin on extending the life span of animals, there is no independent verification studies conducted so far.

Along with this, recent melatonin studies have started to uncover some surprising data that melatonin is either an anti-oxidant that affects the aging process or works as an immune stimulator instead of functioning as a hormone or a neurotransmitter. For example, the melatonin in an in-vitro test mixes the stung perxyl radicals much more effectively than vitamin E. If this fact is effective in a biological system, then the melatonin can provide a preventative action against the oxidative damage.

Supporting this assumed role is a proof of the melatonin's functions as a cell stabilizer. If this is correct, then the argument for melatonin as a possible anti-aging intervention has a strong physiological basis. Along with this, the use of melatonin as a good-natured anti-aging factor has many questions that require answers. Many uncertainties that are similar to other hormones have recently been evaluated as critical (Yu, 1999).

In summary, functional longevity through hormonal intervention and successful aging are the last goals and the current goal of the effective treatment approaches. Which remaining questions about the hormonal intervention should be addressed by a future study? Here are the many questions that need to be answered: What are the potential benefits and risks of hormonal interventions? Is the metabolic use measureable according to the total metabolic results? Furthermore, its connected network along with the long-term hormonal intervention effect on all the hormonal balance should be evaluated carefully. Thus, the most appropriate hormone dose level should be determined and should be a part of the accepted aging study procedures.

Because the casualty and course of aging is versatile, no one should expect a single intervention in order to significantly prevent the aging and the pathological processes.

### Nutrition

Free radicals are unstable and harmful chemical substances that occur during normal metabolism functioning of the body and increase when exposed to stress (x-rays, solar rays, excessive physical and mental fatigue, environmental pollution, smoking, etc.). The substances that catch the free radicals (oxidants) and disarm them are called antioxidants. Under normal circumstances, they neutralize the free radicals with the natural antioxidant systems and prevent the damage the free radicals will cause but over time this mechanism becomes insufficient. Two factors weaken the body's defense power:

- Harmful substances acquired from the environment and food are increasing more and more. Today's generation is faced with more free radicals than the older generations.
- The activity of the enzymes increase as the age advances.

For these reasons, our body's own defense system alone is not enough. The body needs external support and anti-oxidants to fight the free radicals. Fortunately, nature provides us with many nutrients with very powerful anti-oxidants. The anti-oxidants are certain enzymes, hormones, vitamins, minerals and herbal chemicals and the most effective anti-aging substances. With the help of these, diseases can be prevented, hormonal balance can be maintained and the aging process can be delayed. The best protection against free radicals is to know the anti-oxidants, to be nourished and to keep the effectiveness of the support products at the highest level. Below are some of the best and most effective anti-oxidants. There is no need to use all of these at the same time. It will be beneficial for you to get your physicians to assist you in choosing some of the most suitable one for you (Kavas, 2003).



### **Vitamin E**

Vitamin E is a fat-soluble anti-oxidant. With this method, it protects the cell membrane from the damages of the oxidation activities, connects to the oxidized fats that have gathered within the artery walls and minimizes them, and prevents the formation of plaque. Vitamin E reduces the heart infarction by 49%. In addition, with its blood thinning effect, similar to aspirin, it prevents the formation of blood clots. As a powerful anti-oxidant, it prevents cataract formation and aging of the immune system. Major sources of Vitamin E include grain, eggs, hazelnuts, soybeans, vegetable oils, spinach and green leaves.

### **Vitamin C**

Vitamin C melted into water cells by strengthening free radicals and prevents their damaging DNA. Lowers blood pressure increasing the immune system reduces the risk of cataracts and cancer in old age. Excreted in the urine.

Here are the major sources of vitamin C; citrus fruits, green vegetables, potatoes.

### **Carotenoids**

The carotenoids are nutritional elements that give color to fruits and vegetables. The most important carotenoids for our body, out of hundreds, are beta carotene, lutein, xanthine, cryptoxanthin and lycopene. Using plenty of yellow, orange, red colored fruits and vegetables and dark green leafy vegetables that contain high carotenoid reduces the risk of cancer and the occurrence of age-related diseases (cataracts, cardiovascular diseases). Carotenoids have effective strong anti-oxidants and prevent the damage that the free radicals cause to the body's cells.

Major sources of carotenoids are: apricots, broccoli, carrots, peaches, spinach, pumpkin and red peppers.

### **Alphalipoic Acid**

It is a strong defender against free radicals. It is a substance, produced naturally in the body. Due to both resolution in oil and in water, protects the cell structures and membrane from free radicals. Mitochondria within a cell energy station. Here is the place energy generated. For this reason, mitochondria's oxygen stress (free radicals) is the highest fraction. In particular, mitochondria need antioxidant protection. Glutathione is the most important preservative for mitochondria. Alphalipoic acid is a key ingredient for the formation of glutathione (Rumsey et al 1998). Alphalipoic acid enters into mitochondria prevents the formation of free radicals. Alphalipoic acid helps diabetes prevent its complications. Prevents skin wrinkles to this end, the volume is added to the skin creams. Improves the functions of the brain, liver, cataract formation and delays aging. It is recommended to take day 1 or 2 times 50 mg tablet per day. (Rose 1996).

### **Grape Seed Extract**

Provides significant benefits against heart diseases and certain types of cancer, and it has been established that it is good, at the same time, for inflamed joint rheumatism and in treatment of some allergies, varicose veins, hemorrhoids, blue spots on the skin and age spots. 100mg a day is sufficient.

### **Green Tea**

Green tea has an effect of lowering cholesterol level in the blood. It has been determined in the studies conducted that it is also effective against many cancer types. Drinking 1-2 cups a day is recommended.

### **Lutein**

Lutein is one of crocetin and active antioxidant. Especially, removes the free radicals formed by the Sun's harmful ultraviolet rays, it was also proved to delay the macular degeneration which causes widespread blindness in advanced ages. Lutein is rich in green vegetables (spinach, etc.). if it is not consumed enough amount, it is recommended to take 6 to 20 milligram tablet once a day.

### **N-Acetylcystein**

Nickname of NAC is used for its abbreviation. It increases the glutathione production of the body. It is a natural anti-oxidant and is produced by the cysteine's in the liver, glutamic acids and glycine amino acids. Prevents the damage caused by the free radicals to all our organs and tissues. Glutathione protects the immune system and can prevent the harmful effects of radiation, cancer treatment drugs, cigarettes and alcohol. It is also used as an anti-inflammatory for the inflamed joints and allergies. 600mg of NAC tablets are used daily in order to increase the production of the glutathione.

### **Selenium**

Frequency of cancer in the region of Keshan, China where there is no selenium, has revealed this substance's cancer protection effect. Plays an effective role in the metabolic functions as a component of the enzymes. Selenium has a very important place in production of the glutathione peroxidase enzyme which is the most important natural anti-oxidant in our body. It also disables heavy metals such as lead, mercury and cadmium not just free radicals. Strengthens the immune system and provides support for the tissues to remain elastic and supports in reducing the risk of cardiovascular diseases and stroke.

Shelled wheat and rice, onions, garlic, tomatoes, broccoli, hazelnuts, walnuts and seafood are the natural sources of selenium. Taken 50 to 100mcg tablets a day as supplement.

### **Coenzyme Q-10**

In order for our cells to carry out their normal function, they need energy. It is the energy producer of the mitochondria cell. The energy of the body is provided by the ATP. The enzyme activator, Q-10, is the main chemical for the production of ATP. Q-10 fights as an anti-oxidant within the army that fights



against the free radicals. Q-10 supports vitamin E. Coenzyme Q-10 protects the heart and lowers blood pressure. It is thought that Q-10 plays a part in fish preventing blood clots. If there is a risk of a heart disease, it is beneficial to take 30 to 50gr of coenzyme Q-10 and 400 IU vitamin E. Coenzyme is a substance that exist in the human body, in food (soy, spinach, broccoli, sesame oil) and especially in fish (Yilmazturk, 2005).

### **Physical Activity (Exercise)**

It is possible to count the benefits of exercise as follows:

- Reduction in blood glucose and triglycerides and increase in the HDL,
- Improvement in mild and moderate blood pressure,
- Helping with diet to lose weight,
- Increase in cardio-vascular condition,
- Increase in body elasticity,
- Increase in quality of life.

Before starting exercise, you must consult with your doctor in order to determine the right exercise type for your state of health. The exercises that are beneficial for health must be carried out with awareness and in a planned manner on certain days of the week. Exercises that are done occasionally and in irregular manner have a very limited contribution to our health. Exercises that are last at least 30 minutes, increase the pulse to a certain level and are performed 5 days a week can be beneficial in terms of health. The best example for these exercises would be walking in pace, riding a bike or swimming. Muscle strengthening exercises are performed 3 or 4 times a week and strengthen the muscles of our arms, legs and abdomen. These exercises have an effect on increasing our growth hormones as well as working our cardiovascular system ([www.antiagingtr.com](http://www.antiagingtr.com)).

### **The effects of physical therapy on memory**

Exercises provide more powerful memory in humans. It is known that exercising prevents the decrease in mental form. The ability to remember the events of the distant past will not deteriorate with age, however, short-term memory declines with age.

Aerobic exercises also help to increase the amount of message transmitting agents in the body, so that the messages reach the brain cells much more quickly. Aging can also affect the intellectual or conceptual ability. Brain needs more oxygen for this type of memory. Quick thinking and quick comprehension of ideas being to decrease in adults and continue until old age. Aerobic exercises slow down this aging process.

### **Relationship between Physical Activity and Obesity**

Exercises have an important contribution in reducing excess weight. However, in order for the people with excess weight to acquire results from exercising, they must show great efforts. Many people believe that the aerobics, swimming, walking or

running they have performed for a certain period of time will result in excellent weight loss but this belief is wrong. Of course you might see approximately half kilos of difference between the before and after exercising but this loss is a disposal of water as a result of sweating, not a disposal of accumulated fat from the body.

It is a fact that this is temporary due to the water loss only. And because the body will consume the necessary new liquids in order to prevent this loss, it is inevitable to return to the old weight in later hours.

### **Physical Activity and Diabetes**

Exercising protects the body against diabetes and it increases the body's sensitivity to insulin. With the increased sensitivity to insulin, the blood sugar level drops and insulin production is reduced. People who are on the move have less risk of having type-2 diabetes even if they are genetically prone. Exercises ease the blood sugar level in diabetes. In type-2 diabetes, the body begins to produce less insulin. Physical activity may prevent or delay diabetes. For type-2 patients, exercises can even substitute for the anti-diabetic drug to a certain extent. Therefore, exercising is a treatment method that should be carried out with the same importance together with losing weight, using drugs and diabetes. It increases the effectiveness of the drug treatments and enables the chance to use less medication.

Compared to the people with immobile lives, people who are older but exercise regularly releases less insulin against the sugar increases in the blood (Kavas, 2003).

### **Physical Activity and Hypertension**

High blood pressure is a major risk for the heart and brain blood vessels. Many researchers have revealed that regular exercise lowers blood pressure in both hypertensive and normal people. While a short-term exercise increases the systolic blood pressure in healthy people, there are no significant changes in the diastolic blood pressure. With long-term exercises, they systolic blood pressure gradually decreases.

Exercises must be at least 3 times a week and not less than 35 minutes and increased slowly up to 60 minutes. The intensity of the exercises must be suitable for the age and should not exceed the 40-60% of the maximum heart rate. Intensive and strenuous exercises must be moved away from. If the exercises are performed for a particular resistance, then high resistance and excessive repetition must be avoided.

### **Physical Activity and Heart Disease**

It is known that aerobic exercises help reduce the risk of cardiovascular diseases and reduces the probability of the first heart attack. While exercising, the muscles need more fuel, i.e. oxygen. Therefore, the heart pumps more blood so it is stronger and more effective.

The warm up moves before exercising slowly increase the heart rate, body temperature and the



blood flow to the muscles. Warm-up exercises should last between five to ten minutes.

There will be variety of movements that contain continuous and rhythmic contractions of the leg and arm muscles during aerobic exercises. The last stage of the exercise program is cooling. Cooling helps to slowly lower the heart rate to the same level before the exercise and prevents the excessive blood gathering in the legs. Dizziness may occur at times during the cooling process. For this purpose, low-intensity exercise, such as walking, should be done slowly for a three to five minute period. Later on, stretching exercises must be done in order to loosen the muscles, to provide flexibility and prevent muscle aches, so the cooling process should last for five to ten minutes. In order to cool down the sweat and restore the muscles to its original state, you should relax for a reasonable period of time, and then take a shower before getting cold and then rest.

Exercising leads to expansion of the blood vessels, so that the heart pumps the blood in front of it more easily to the other parts of the body. Exercise helps to increase the body's metabolic rate. It burns sufficient levels of calories in order to reduce the body fat thereby causing weight loss. Losing weight not only helps you feel better about yourself; it also reduces blood pressure which is a risk factor for a heart disease.

#### **Physical activity and hardening of the arteries (vessel stiffness)**

Older people who exercise regularly, their good cholesterol increase and **bad cholesterol and triglyceride ratio decrease**. In order to lower cholesterol, regular exercise must be done for at least three months. One of the methods to lower the risk of heart disease is keeping the cholesterol level under control. Exercises **increase the good-natured HDL-cholesterol level** that helps clean the bad-natured LDL-cholesterol from the artery. High-density and regular exercise increases the HDL level between 5 to 15%. Even when men exercise in moderate amounts, their harmful cholesterol levels (LDL-cholesterol) tend to decrease. For example, this effect can be achieved with 30-35 minutes of exercise three times a week (Yilmazturk, 2005).

#### **Conclusion**

The number of elderly people 65 years and over have shown an increase of 63% in the last 30 years. In our country, the amount of people who are 65 and over was 4.2% in 1985. According to the 1990 census, it increased to 4.3%. In 1995, this rate increased to 4.7%, in 2000 to 5.6%, in 2005 to 6.3%, in 2012 to 7.2% and expected to be at 7.7% in 2020.

Even though getting older is an inevitable end, important steps have been taken today with ANTI-AGING (delay aging) researches. One of the precautions that delay aging is to gain exercise habits. It also has been proven as a scientific fact that inactivity increased aging.

Decrease in muscle strength, endurance and flexibility, increase in fat rate of the body, coordination and balance impairment, heart rate irregularities, aging, lungs transferring smaller amounts of oxygen, hardening of the blood vessels, thinning of the bones, depression and similar illnesses are reported as the first felt symptoms of old age. Many researchers emphasize that at least 50% of the illnesses caused by old age are due to inactivity.

In order to prevent the illnesses, power loss and hormonal imbalances that may arise as a result of aging and to enable to stay younger for longer, we have to fight free radicals, have to be well-nourished and perform physical activities to stay young and most importantly, have to think positively.

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## FORGOTTEN HEROES OF ANCIENT GREEK OLYMPIC GAMES

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### Abstract

*The aim.* This contribution of history of sport deals with the biggest four sportsmen of Ancient Greece, the winners and Olympic record holders (Leonidas, Ladas, Arrhachion and Milon). Each of them represented different athletic discipline. After a brief introduction about the Olympic Games, the contribution concentrates on the sportsmen, their lives, career and influention, and also speaks about the disciplines in which they represented their polis. Some of them (Ladas, Arrhachion) entered into history not only because of their great performances and victories, but also because of their own agitated fates and premature tragic death.

*Objectives.* The main objective of this contribution is to describe lives, career and influention of the famous ancient Greek sportsmen.

*Methods of research.* Historical literature review.

*Conclusions.* This contribution should be revival of ancient sport and great Greek athletes, whose heritage survived in the

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modern Olympic Games till nowadays. Unfortunately, today the agon was reemplaced by sport and we are forgetting those, who we should thanks for the heritage of the Olympic Games and also we are forgetting those, who were often bearers of Greek ideals of *kalokagathia*, *arete*, *ekecheiria*, *andreia*, *aristeia*. Today, a lot of sportsmen could learn of their determination, honour and imaterial approach to life.

*Key words:* Ancient Olympic Games, Heroes, Greek ideals.

## Introduction

This contribution of history of sport deals with the biggest four sportsmen of Ancient Greece, the winners and olympic record holders (Leonidas, Ladas, Arrhachion and Milon). Each of them represented different athletic discipline.

After a brief introduction about the Olympic Games, the contribution concentrates on the sportsmen, their lives, career and influention, and also speaks about the disciplines in which they represented their country.

Some of them (Ladas, Arrhachion) entered into history not only because of their great performances and victories, but also because of their own agitated fates and premature tragic death.

Leonidas of Rhodos could keep his laurels for sprint and a triastes title (triple winner) for at least 12 years.

Ladas of Sparta, a long-distance runner and maybe the most famous ancient sportsman of all times, paid for his incredible victory with his life. Myron himself made his statue, maybe even more perfect than Discobolos.

A pancratist Arrhachion of Figalia, a multiple winner and a winner in memoriam, had similar tragic fate. In the history of the Olympic Games, Arrhachion was the first sportsman who tragically died.

The last part of the contribution is dedicated to Milon of Croton, another great sportsman who tragically died, although not in the Olympic Games. The number of Milon's victories in fight was not overcome not in the ancient neither in the modern Olympic Games. Simonides himself made up the lines engraved in the Milon's statue. Milon was not only a great athlet but also a thinker. He was a disciple of one of the biggest ancient philosophers – Pythagoras of Samos. This is why we can consider him one of the ideal representative od kalokagathia.

## Essay content

The Olympic Games (the first documented Games took place in 776 B. C.) belonged to the most famous in Greece, its organizer (although maybe not from the start) was the Elida community. In ancient times the Games were formed only by a one whole stadiuim's length running race (192,27m), called *dromos* or *stadion*, and religious ceremonies. The Games were amplified step by step, most of all thanks to Sparta:

- Since 15<sup>th</sup> Olympic Games (720 B. C.) there was a two stadiuim's lengths running race, so called *diaulos* (*dromos* with a turn, 384,5m), and *dolichos*, a long-distance race (7-24 stadium's lengths, 1346 –

4615m).

- Since 18<sup>th</sup> Olympic Games (708 B. C.) the Games were amplified with a fight (*pale*, the fight was ended after one of the rivals had touched three times the ground with a part of his body except for his sole) and pentathlon (*pantathlon*), which was formed by a *dromos*, a long jump (sometimes it could be triple jump, the sportsmen helped themselves with so called *haleras* - the weights from 1 to 5 kg, which had to intensify the speed of take-off, the angle of lift-off, and throwing the weights before the fall should have extended the jump), throwing the discus (probably with a turn), throwing the javelin (the javelin as thick as fingers and as long as a man was loaded on its end and had a 40 cm long leather loop for putting the index-finger and the middle-finger, which prolonged the throw even three times) and a fight. The pentathlon took place in one day, we are not sure about the original order of the disciplines.

- Since 23<sup>rd</sup> Olympic Games (688 B. C.) *pygme* or *pyx* (a fist fight, boxing) was included into the Games – it was permitted everything except for the hits to the genitalia and holding of the rival. The fight was unlimited, but if it was too long, so called *klimax* (gradation) happened, when after a lottery the boxer had to accept a hit without cover and if he resisted, he had the right to the same retaliation. There were frequent deformations of faces, broken noses and teeth, even the death.

- Since 33<sup>rd</sup> Olympic Games (648 B. C.) there appeared a combination of boxing and fight called *pankration* (permitted everythnig except fot the hits to the genitalia, biting and scratching) and horse races *hippos keles* (later also races with a team of two and a team of four horses or mules, a team of four foals, riding a foal, riding a not-saddled mare with a jumping down and running to the meta).

- Since 37<sup>th</sup> Olympic Games (632 B. C.) the Hellen youth took part in the Games.

- Since 65<sup>th</sup> Olympic Games (520 B. C.) another runner's discipline – the race of hoplites, so called *hoplitodromos* (it was a two stadiuim's lengths running race - *diaulos* - with full armour and later, since 450 B. C., only with a shield and a helmet). After the introducing of *hoplitodromos*, the 3<sup>rd</sup> sprint discipline, there could come into existance a honorary degree *triastés* (triple winner), awarded to triple winners (*dromos*, *diaulos*, *hoplitodromos*) of one Games in Olympia. Altogether only six runners recieved the title (the first one was Fanas of Pellena, others were for example Leonidas of Rhodos,



Hermogenes of Xanthos, Nikokles of Akrios and Hekaitomnos of Elida).

- The part of the Games were also competitions of pipers (*auletés* included in 58<sup>th</sup> Games), buglers (*salpisté*s) and announcers, heralds (*kérykés*) - the last two competitions took part since 96<sup>th</sup> Games in Olympia (396 B. C.)

Out of the religious festivals and sporting events, various lectures, art exhibitions, treasure and national trophies exhibitions, musical and vocal performances and Olympic markets were organized during the Olympic Games in Olympia. In addition to it, Olympia grew rich also thanks to a share of the spoils of war of Greek communities (it was about one-tenth of the spoils). At the time of the Olympic games there was proclaimed holy peace (*ekecheiria*). The Games initially lasted one day, later five days, maybe even seven days. Competitors had to attend at least ten months before the beginning of the Games in Elida, where they took part in pre-olympic training camp and after it they had to march two days on the holy way to Olympia. Foreigners and slaves were excluded from the Games, women and girls in Olympia participated in the so-called *herae*. The competitions were managed by *Hellanodikai*, elected judges (their number gradually stabilized at ten; they were voted about a year before the games and were preparing for them ten months), but upper management as well as the organization of the preparations, was in charge of Olympic Committee (*bulé*). Helanodikos had at hand the *rhabduchos*, superintendents with a stick (J. Grexa, M. Strachová, 2011, p. 39-43; V. Sábl, 1960, p. 106; V. Sábl, 1968, p. 54-63; R. Šíp et. al. 2008 p. 36).

### Leonidas of Rhodos

Leonidas of Rhodos was undoubtedly the greatest ancient Greek sprinter. The number of his Olympic victories was never broken (taking into account the ancient and modern Olympic Games).

Leonidas was the winner of the 154<sup>th</sup>, 155<sup>th</sup>, 156<sup>th</sup> and 157<sup>th</sup> Games in Olympia in *dromos*, *diaulos* and *hoplitodromos* and each time in one day. It means that this leadership he managed to keep for 12 years. We have no data preserved about his other victories, where he could win only one or two of these events, but we can assume that the total number of his Olympic victories was even greater. Along with these prizes he won four titles *triastes*. Unfortunately, there are no extant data on the number of victories in other ancient Greek games (V. Sábl, 1968, p. 269-270; S. G. Miller, 2004, p. 205).

After this outstanding sprinter of Rhodos there was named a hotel, located in Olympia, the *Leonidaion* (R. A. Mechikoff, 2010, p. 70).

Similarly outstanding sprinter did not appear in Olympia until 250 years after Leonidas, it was Hermogenes of Xanthos, in Asia Minor nicknamed "Hippus" ("Horse"). He won eight olive wreaths of

winners and two *triastes* titles. The trio of the best sprinters is complemented by ancient Spartan Chionis who did not have the possibility to get a degree *triastes* or run victory of the hoplites, at the time when he lived and raced, this discipline was not in the Games. Chionis managed to win four Games in Olympia in *dromos* and the last three also in *diaulos*; probably he was a pentathlete, as we will discuss below (V. Sábl, 1968, p. 262-264, 270).

Now we will pay more attention to another great runner, the long-distance runner Ladas from Sparta.

### Ladas from Sparta

Undoubtedly the greatest and most famous long-distance runners were courier Philippides (or Feidippides) and Ladas from Sparta. Philippides entered into history as the first marathon runner. Before the encounter of Persians, led by Darius I., and Greeks, who were commanded by one of the strategists Miltiades, at Marathon, Philippides ran from Athens to Sparta to request for assistance and then he ran back. Later, after Miltiades' victory, he was sent to Athens to proclaim the result of the battle and alert the impending invasion residues of Persian forces near the city. According to legend, he exclaimed: "Victory" and died.

The second named, Ladas from Sparta, who will be paid attention here, was the Olympic champion in 76<sup>th</sup>, 80<sup>th</sup>, or 85<sup>th</sup> (according to German historian Forster) Games in *dolichos*. His first start in Olympia at the same time became his last. Ladas' great performance, his superiority over rivals and his step lightness were the inspiration for many Greek artists. The ancient historian Solinus wrote about him, that his racing track touch in deep sand stadium was so light and fast that he even left no trace (V. Sábl, 1968, p. 271-272).

Ladas great performance was praised by several ancient poets, let us mention for example this anonymous poem in his honor:

*„As you were in life, Ladas, flying before  
wind-foot Thymos,  
barely touching the ground with  
the tips of your toes,  
just so did Myron cast you in bronze,  
engraving all over your body  
expectation of the crown of Pisa.  
He is full of hope, with the breath on  
the tips of his lips  
blowing from within his hollow ribs;  
bronze read to jump  
out for the crown – the base cannot  
hold it back;  
art swifter than the wind.“  
(S. G. Miller, 2004, p. 231).*



or also:

*„Ladas ran through the stadium, or rather flown,  
there are no words for such amazing speed;  
still sounds in my ears a click of barrier<sup>1</sup> when Ladas  
reached his hand to get the wreath in the final take-  
off.“ (V. Sábl, 1968, p. 272; translation Mgr. Eugenie  
Estrada Zavala).*

Because of this demonstration, many believed that Ladas was runner of *dromos*, some of them could confuse him even with the sprinter Ladas of Aegina, the winner of 125<sup>th</sup> Olympics, but it was almost certainly the long-distance runner from Sparta (V. Sábl, 1968, p. 272).

But Ladas did not go through fame and welcome after his great performance in Lakedaimon. He died either as a result of heatstroke at the stadium in Olympia, or on the way home when he fell ill after the race. He was buried 1.5 hour drive from Sparta (about 50 stages, almost 10 km) on the banks of the River Eurotas beside the road between Sparta and Belemina. At this point, there was built his monument there. (V. Sábl, 1968, p. 272-273). According to the Greek geographer and historian Pausanias this memorial to the excellent Spartan athlete, the winner of the long runway at Olympia "*who quickly running surpassed all his contemporaries*" (Pausanias, 1973, p. 261) was located about 20 stages (3.7 km) from the statue of Shyness (Aidos), showing Penelope hiding her face from the father and leaving with Odysseus, in the direction of Arcadia (from Sparta), where Spartan women travelled to lay their victims and pray. Likewise, at the Ladas' memorial most likely the young Spartans were stopping on the way to Olympia to beg for luck and a successful return (V. Sábl, 1968, p. 273).

Out of the referred memorial in Sparta there was named a racetrack after Ladas and there were built two statues (in the temple of Apollo Lykios in Argos and in Olympia), created by Myron himself. Many artists then chanted not only the outstanding endurance athlete, but even these great statues, especially the statue in Olympia, which was probably even better than the famous Myron's *Discobolos* (see the first poem in honor above). This great statue should represent Ladas "*in a moment of high tension forces at the meta*" (V. Sábl, 1968, p. 233).

Unfortunately, no Ladas' portrait was preserved (the original was probably later taken to Rome, where it got lost, and we do not know about any

copies of the statues). Neither the stadium in Orchomenos, where Ladas probably trained during the Spartans campaign in Boeotia, was preserved. In today's times, the Ladas' immortality is maintained and lasts only in a legend.

The other two ancient heroes, we are going to speak about, became famous in power disciplines, first let's speak about life and achievements of pancratist Arrhachion.

### Arrhachion of Figalia

Pancratist Arrhachion (or Arrhichion) came from Figalie in southern Arcadia. He won the 52<sup>th</sup>, 53<sup>th</sup> and 54<sup>th</sup> Olympics. On the 54<sup>th</sup> Games (564 B. C.). He died, becoming the first athlete tragically deceased in Olympia (V. Sábl, 1968, p. 278).

After qualifying for the finals, his opponent threw him to the ground during the fight, grabbed his throat and began to choke him, Arrhachion wanted to give up, but he heard the words: "*What a beautiful shroud<sup>2</sup> such cannot be refused in Olympia.*" which his coach Fryxias said. Arrhachion rejected the idea of surrender, gathered the forces and with the last breath he broke or sprained rival's toe and the rival immediately gave up. After separation of the two athletes Arrhachion stayed lying motionless on the competition area and the referee found that he died. Pancratist of Figalia was the winner, but he was crowned with olive winner's wreath posthumously on the cold face (R. A. Mechikoff, 2010, p. 58-59; Z. Newby, 2006, p. 88; Pausanias, 1974, p. 154; V. Sábl, 1968, p. 278-279).

Stephen G. Miller describes Arrhachion's last fight in his book *Ancient Greek Athletics* (2004, p. 59): "*In the final bout, Arrhachion's opponent, having already a grip around his waist, thought to kill him and put an arm around his neck to choke off his breath. At the same time he slipped his legs through Arrhachion's groin and wound his feet inside Arrhachion's knees, pulling back until the sleep of death began to creep over Arrhachion's senses. But Arrhachion was not done yet, for as his opponent began to relax the pressure of his legs, Arrhachion kicked away his own right foot and fell heavily to the left, holding his opponent at the groin with his left knee still holding his opponent's foot firmly. So violent was the fall that the opponent's left ankle was wrenched from his socket. The man strangling Arrhachion ... signaled with his hand that he gave up.*"

In Olympia there was erected Arrhachion's monument in commemoration of his victory and on the Agora in his native Figalia there stood fighter's stone statue with a slightly straddled legs and arms lowered to his sides. This monument to Arrhachion belonged to one of the oldest statues of Olympic winners. A similar

<sup>1</sup>Click of barrier - was meant wooden bar, which was dipped by a starter with a cord or strap. This wooden bar was placed on the columns and should prevent any of the competitors ran out prematurely.

<sup>2</sup> In this context, in ancient Greece shroud meant death.



statue was discovered nearby Figalia in 1890, which has led many to conclusion that it shows Arrhachion himself (V. Sábl, 1968, p. 279; Pausanias, 1974, p. 154).

The last part of the paper is devoted to the wrestler Milon, perhaps the most famous ancient athlete.

### Milon of Croton

Wrestler Milon (or Milo) of Croton, Diotimos' son, achieved in ancient Greece such glory that only few people were able to overcome. The number of his victories no ancient or modern wrestlers could overcome, only Hipposthenes of Sparta could be compared to him.

This great athlete nicknamed the "king of fighters", as a competitor who won all four panhellen games was a six-time holder of the title *periodonike* (V. Olivová, 1988, p. 119; V. Sábl, 1960, p. 120).

Milon was one of the greatest representatives of the ancient ideal of *kalokagathia*, as well as his coach and mentor, one of the greatest ancient philosopher and mathematician, Pythagoras of Samos, who created one of the most ancient philosophical concept, where as the basis of all (*arché*, element) is considered the number, the only variable that does not change and does not expire. Milon was one of his best pupils in order to develop *kalos* and *agathos*.

Many admired not only his olive winner wreaths but also his scientific writings *Physics*, which he wrote under the influence of Pythagoras (V. Sábl, 1968, p. 188).

Almost certainly Pythagoras' scientific substantiation of the main principles of training had a great influence on Milon. This great philosopher ordered to alternate body care (sport) with the care of the soul (philosophy) and a special diet in his school. Pythagoras' disciples often practiced in the garden and in the woods, running, wrestling, strengthened with weights, etc., they followed the rules of proper diet, which also created their teacher. With those most talented he prepared for the races and probably he also travelled to Olympia (his presence there was confirmed by Plutarch or Pythagoras himself in one of his considerations) and to other places of the Greek games (Delphi, Nemea, Isthmos) (V. Olivová, 1988, p. 97; V. Sábl, 1968, p. 188).

About Milon's childhood and his enormous power, that the athlete abounded, have been preserved to this day references. A poem tells that he at the age of four years already winched burden, then in Zeus' feast put on his shoulders a mighty beast that he carried so easily that in the crowd there aroused astonishment, he could even run over the stadium with a four-year bull on his shoulders and below the sacrificial altar on the plain in Písa he managed to break a young bull in two, and then eat the whole (V. Sábl, 1968, p. 280).

His first victory in Olympia Milon earned as a

fourteen year old youngster at 60<sup>th</sup> Olympic Games in 540 B. C. After it he won five times in a row in the men's category. Such a great performance no one of the ancient and modern Olympic athletes overcame. From the ancient athletes only Hipposthenes of Lakedaimon could be compared to him (five victories among adults and one as a youngster), who was in Sparta worshiped as heros and closer to him there was Hipposthenes' son Hetoimocles with a total of five Olympic victories. From the modern athletes the Russian wrestler Alexander Karelin and after the London Olympics in 2012 Uzbek wrestler Artur Taymazov, both with three gold medals, Hungarian boxer László Papp and Cuban boxers Teofilo Stevenson and Felix Savon, all of them also with three gold medals, are able to near the most. Such (and higher) number of Olympic victories was achieved by other ancient athletes, for example, in a fight mentioned Spartans Hipposthenes and Hetoimokles, Arrhachion of Figalia won three times in pankratios in the ancient Games in Olympia, or Tísandros of Naxos with four victories in boxing in Olympia, which made him the most successful boxer of all time, the athlete of the island Thasos, Theágenes was a twice Olympic champion (he collected together from 1200 to 1400 winnings in the Greek plays from the boxing and pankratios and some games from dolichos) and was known as "a wonderful god" (V. Olivová, 1988, p. 119; V. Sábl, 1968, p. 277-278, 280, 287). Out of the sporting events there became the most successful ancient Olympian bugler Herodoros of Megara with ten victories since 113<sup>th</sup> Games in 328 B. C. (J. Grexa, M. Strachová, 2011, p. 43).

In addition to the six Olympic victories Milon won nine times in Nemea, ten times the Isthmos, seven times in pýthian games in Delphi, and an unknown number of times in other Greek games (V. Olivová, 1979, p. 99).

His Olympic career Milon ended at 67<sup>th</sup> Olympics at his seventh attempt to gain olive wreaths, where he was, at least forty years old, defeated in the finals by pancratist and a wrestler from Delphi Timasitheos (V. Sábl, 1968, p. 282).

Milon's fingers, which could squeeze an apple, even the most strong men apparently were unable to move, several men were not able to pull him on the ground, although he was standing on oiled disc (Pausanias, 1973; Potter, 2011, p. 95-96). They also say „Milo could tie a cord around his head and then hold his breath until the veins swelled so hard they broke the cord“ (Miller, 2004, ). During one of the Pythagoras' lectures the ceiling of the auditorium threatened to forfeit, when Milon raised his arms and leaned against the beams and saved all presents.

Before the end of his Olympic career, Milon participated in wars against neighboring Sybarida at Traenta, where he commanded the right wing and he was dressed in a lion's skin and armed with a club, which had to remind Heracles and greatly helped to Crotonian victory when he drove the enemy's left wing



in retreat (Newby, 2006, p Potter, 2011, Sábl, 1968).

Milon was so famous that the Persian King of kings Darius I. heard about him and his personal physician Démokédes later married Milon's daughter (V. Sábl, 1968, p. 283).

At the end of his illustrious career the great athlete lived financially completely secured in his hometown of Croton. Apparently he was also a priest of the temple of Hera there (Sábl, 1968, p. 283). This only confirms the great respect the famous Greek athletes enjoyed in their country.

Unbelievable were also Milon's daily eating habits: it was about 20 min (8.74 kg) of bread, 20 min of meat and 3 cuses (9.7 liters) of wine - it would amount to 57,000 calories every day! This is the tale probably wildly exaggerated (Potter, 2011, Sábl, 1960).

Several ancient writers (such as Roman Claudius Aelianus, about 100-140 AD) caught the matching the strengths between Milon and Titormos of Aitolia; he was either a herdsman from the mountains, or (more likely) a landowner, about whose strength Milon heard and decided to measure his fitness with him (*arete*). They encountered in the mountains near the border between Aitolia and Lokrida near the River Euéna (Fidar). Titormos started with the competition, he picked up a large rock on his chest and pushed him three times from the body forward and back to his chest, then put it on his back and took it about 8 yards (14.6 meters) away, where he dropped it to the ground. Milon repeated it, but with the difference that he carried the boulder back and forth. Then he could continue; therefore he took by his hands a sturdy bull on its foot and keep it in place. Titormos overcame it, he caught the same bull with one hand and held it on a place and with his other hand he held a similar animal (Sábl, 1968). After it Milon lost interest in further rivalry and said, „*Oh Zeus, did you give me the second Heracles?*“ (Sábl, 1968).

Alike mentioned long-distance runner Ladas and pancratist Arrhachión, Milon of Croton also met a tragic end. During a walk in the woods he noticed a cracked stump with a wedge and decided to test his strength. With his hands he tried to tear the stump, but when he put his hands into it, the wedge fell out and the stump pressed Milon's fingers of both hands, then he was torn by a pack of wolves (Miller, 2004, p. 160-161; Pausanias, 1973, Sábl 1968).

Milon's statue for Olympia was created by his compatriot Dameás of Croton. They say that Milon himself carried it on his own shoulders to Olympia (Pausanias, 1973, p. 459). He stood there straddling on the disc and squeezing an apple in his fingers, which should refer to his incredible strength. The author of the verses on its pedestal, remains of which were found during excavations in Olympics, was none other than one of the most famous Greek poet Simonides: „*Beautiful is the statue here of beautiful Milon, once in Pisa he won seven times in a match, without falling to*

*a knee.*“ (V. Sábl, 1968, p. 280).

However, some (for example, a contemporary of the Roman emperor Nero epigrammatist Lukillios) argued that once in a series of victories Milon did touch the sand arena with his knee. „*As he was coming forward to claim his uncontested victory, he slipped and fell on his back: 'The crowd shouted that he should not be crowned since he fell down all by himself. Milo stood up in their midst and shouted back, 'That was not the third fall, I fell once. Let someone throw me the other times.'*“ (Miller, 2004).

The most famous Milon's disciple was pentathlete Fayllos of Croton, antique record holder in discus throw and winner of two games at Delphi in pentathlon, once he won there a running race (he was around 20 years old). On 28<sup>th</sup> September 480 B. C. he fought alongside the Athenians against the Persians at Salamis, where he commanded a Crotonian ship built on his own expenses (he sold his fields, he house donated by the polis and the rest he borrowed from friends), and where he died. He was rewarded with a monument built on the Athenian Acropolis. According to the sources Fayllos had to jumped into the incredible distance of 55 feet (Delphic foot = 29.66 cm, therefore, he had to jump 16.31 meters), but the record of ancient Greek Olympics is 52 feet (32.04 cm, ie 16.66 m) which was achieved by great runner Chionis of Sparta. Maybe it was a mistake, but most likely it was not a normal jump, but the triple jump. They say that Fayllos threw disc 95 feet far, that is 28,17 m. The problem is that found Greek discs weigh from 1,268 kg to 5,707 kg, which causes problems when comparing performances (J. Parandowski, 1937, V. Sábl, 1960, V. Sábl, 1968,).

Milon was the ideal representative of the Greek ideals of *kalokagathia*, *arete*, *andreia* ... We believe that a large share of Milon's victories can probably be attributed to a sophisticated workout system created by him and by a great philosopher and mathematician and athlete Pythagoras, one of the greatest philosophers and mathematicians at all. This great system with sophisticated tactics and techniques had to be, next to Milon's strength, talent and commitment, the most important, that made this superb athlete to maintain leadership in the great competition for 20 years (if we add his junior victory and second place in his last game, we get 28 years of great performances). David Potter (2011) wrote that „*Milo's style seems to have been based upon his enormous strength and ability to body-slam his opponents.*“

## Conclusions

This contribution should be a revival of ancient sport and great Greek athletes, whose heritage survived in the modern Olympic Games till nowadays. Unfortunately, today the agon was reemplaced by sport and we are forgetting those, who we should thanks for the heritage of the Olympic Games. Heroes



as mentioned sportsmen or other athletes as Chionis of Sparta, Fanas of Pelléna, Lygdamis of Syrakus, Hipposthenes and Hetoimokles of Sparta, Tisandros of Naxos, Theágenes of Thasos or for example Lampis of Sparta, Filombrotos of Sparta, Ikkos of Tarent and others were often bearers of Greek ideals of *kalokagathia*, *arete*, *ekecheiria*, *andreia*, *aristeia* and a lot of sportsmen could learn of their determination, honour and immaterial approach to life.

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## DANCE CONTRIBUTION TO THE DEVELOPMENT OF YOUTH PERSONALITY

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### Abstract

*The research* wants to contribute to:

Promoting the Dance Activities in Society and also in the computerized society, newly developed, by choosing the Psychological Dance Program, which is most of the times heterogeneous – for diverse temperaments and types of teenagers and young people in order to create ways of communication between them. Sport activities, modern dance, sport dance, society dance, represent for both teenagers and organizers of these types of psycho-artistic activities, most of the times, the determining points of attraction in selecting and participating to the psycho-therapeutic programs.

This determines the way of finding the most attractive means of dance, finding the appropriate dance section for certain groups of age and temperaments; the purpose of the organizers of these psycho-artistic is: to shape the personalities of teenagers in accordance to their own behavior for a better adaptation to society and a better result in the function of their future professional activities. Finding the best programs for relaxation, active recreation in order to eliminate nervousness, pressure, frustration and the stress of school. Dance is the antidote of the over strung sense of teenagers when they are under the influence of disturbing factors found in a negative environment and having a bad influence upon their bodies.

The efficiency of the methods for developing the personalities of teenagers through dance is the toning of the morale and spirit, rehabilitation of self-esteem, vitality, energy, force and dynamics, a healthy soul, solid body and healthy mind – like the saying ‘mens sana in corpore sano’.

The Objectives of the Research are interested in finding a way to resolve these types of requests come from practice and requested by practice.

The Experiment started from the need to increase the work speed of the dance instructors during the classes with adolescents and young people engrossed in these artistic activities, be they performance or purely recreational. The final goal is to shape the personality of teenagers having in view their temperaments, disregarding the methods used and the

type of activity.

**Conclusions.** The result study shows that dance in its self, the modern dance, is an integrated part of psycho-artistic programs no matter the proposed objectives. Dance programs (modern dance, social dance) make a big difference when it comes to getting to know the person of a group, the homogenization of the group, the harmonization of the harmonization of the group and the bounds of it.

It is recommended to consult and contact the dance specialists by the organizers of the Psychological Programs in order to make the programs attractive and adequate.

**Key words:** artistic dance, personality, temperament, rhythm, effort, natural movement, elegance, refinement.

## Introduction

**Dance, as educational effect** for children, pupils and the youth is a phenomenon in a continuous dynamic; it is the expression of human activity, of educational creativity and diversity.

### **Dance, in terms of personality development for 17-18-year-old teenagers**

Dance is: art and artistic sport, study and recreational activity, ritual and entertainment, education, culture and formation at the same time.

Dance, an explosion, in the manifestation of young people, is a means of nonverbal communication for all types of temperament, being used in different specific ways. Through dance, one discovers their partner's way of life, their inner self, spiritual level, their ability to express themselves, certain habits and their imagination.

Dance can combine the "strict vocabulary of movement" through personal means in hundreds of combinations. It's a natural activity!!!

Rhythmic movements of one's body are instinctive. Dance flows from young people's need for personal expression and social contact.

It brings a favorable change in each of us. Through dance we express our sadness, our exaltation, our passion and, finally, the entire ensemble of possible moods and feelings.

Dance has been known, from the dawn of primitive man who, seeing his shadow moving on the cave's wall, began to move as well, enjoying the "dance of his shadow".

**Dance in everyday life** is used as a means of **movement education, mental, psychological, cultural and social education.**

Dance has no age limit. It is a recharging of the Soul, an expression of one's temperament. It becomes part of

youth's intense life

For the education of young people's personalities, dances which contrast with their temperament were chosen, to test their reaction to novel situations, their power of concentration: to overcome the different existing circumstances and, at the same time, **to develop their less active areas.**

- for those with **choleric** temperament "**dances with enthusiasm and endearing temperament**" were chosen, emotional, soft, sentimental, affectionate, filled with love and compassion. Slow, bohemian, tender dances with languid, peaceful and calm movements. Softer, tranquil and harmonious dances, delicate, gentle and graceful, smooth and suave, quiet, temperate and mastered with low resistance to effort. Lyrical, ambiental, contemporary dances that require diligence, perseverance, where emotional processes are intense and long-lasting.
- for those with **sanguine** temperament "**dances with enthusiasm and quiet temperament**" were chosen, choreographic fantasies, thematic dances; dances that require tolerance, patience and calm.
- for those with **melancholic** temperament "**dances with enthusiasm and lively temperament**" were chosen, dances with an explosive feel to them, violent, fierce dances: flamenco, Spanish, Mexican dances, the tango, dramatic dances – the "paso doble" fight with bulls, dances that require intense emotional processes, richness and force of reactions, passion.





- for those with **phlegmatic** temperament “dances with enthusiasm and excitable temperament” were chosen, fast, dynamic, quick and energetic dances with prompt executions: jive, rock, samba, salsa, aerobic dances – that require effort and high stamina, involving mobility and high amplitude. Dances that require sociability, a good mood, swift reactions, dynamism.

#### Types of Temperament

#### The Choleric, the Sanguine, the Phlegmatic, the Melancholic, the Extrovert, the Introvert

A person's temperament is “given” at birth, predominantly innate, hereditary, according to one's personal genetic code, but it is influenced a lot by education and living conditions offered by the environment. Temperament characterizes the individual through the synthesis between the different degrees of: energy, mental mobility and mental balance.

Temperament is the ensemble of biological elements that, together with psychological factors, constitutes the personality; the energetic and dynamic side of personality.

To fully know a person's traits is a very complex endeavor. In support of their understanding, there can be observed aspects regarding appearance, facial expressions, reaction speed to external stimuli, involvement in tasks, **reaction to constant effort**, their way of interacting with their kin.

The human personality revolves around a few **dominant traits** that are both innate and acquired:

1. When referring to inherited traits, we refer to the **Temperament**;
2. When referring to the development of social-cultural traits, we refer to the **Character**.

The two notions are usually confused because of the interdependency state in a personality.

According to **S. Rubinstein**, the temperament is the energetic-dynamic side of the personality.

#### The temperament manifests itself as:

1. **energy level** and way of accumulating and discharging of energy, which can be: energetic, resistant, explosive, fierce, violent or slow: slow, lazy, passive, lacking of vigor and stamina, weak, frail, calm, quiet, peaceful. Mellow, sober, tempered; but also as:

2. **dynamic level**: fast-slow, mobile-rigid.

**G. Allport** shows that temperament affects the characteristics of an individual, the reaction to emotional stimulus, the capacity of restrain or action and the quick respond to a situation. Also, it affects the persistent affective disposition.

**Affectivity** is an important tool in defining temperament, forming it by identifying the emotional tone, of the stability and the depth of experiences.

#### Temperament is a singular fact.

There are just as many different types of temperament as there are people. Each one's temperament is a singular fact as each human is unique.

From ancient times, **Greek medics Hippocrates and Galen**, distinguished four fundamental temperaments: choleric, sanguine, phlegmatic and melancholic. These were the result of a mix between **the four humors (fluid substances) in the body: yellow bile, blood, phlegm and black bile**. Correspondents were created with the fundamental elements: **air, water, fire, earth** and even with the four seasons.

For science purpose, different similarities and distinctions were made between certain aspects of human temperament, even classifications, which lead to various typologies.

#### Thus:

- Choleric – he is characterized by the yellow bile, represented by **fire**, with a **warm character, and as hot as summer itself**.
- Sanguine – is distinguished by the predominance of blood, is associated with **air**, is **violent and unstable as spring**.
- Phlegmatic – is linked to phlegm, represented by **water**, humidity, **the coldness and stiffness of winter**.
- Melancholic – is governed by black bile, portrayed by **earth**, the gloom, **the sadness and kindness of autumn**.

From the point of view of stability, the temperaments are split in two categories: stable temperaments and unstable temperaments.

**Stable Temperaments** and the description temperament traits:

1. **Sanguine Temperament – excitable type**



- positive: sociability, good mood, quick reactions, dynamic;
- negative: fluctuation and inequality of emotions, self admiration, shallowness, suggestibility, inconstancy.

## 2. Phlegmatic Temperament – calm type

- positive: tolerant, patient, perseverant, equilibrium;
- negative: rigid, slow reactions, difficulty in adapting, affective monotony, stereotypical type.

**Unstable Temperaments** and the description temperament traits:

### 1. Choleric Temperament – excitable type

- positive: sharp will, intense emotional processes, richness and intensity of reactions;
- negative: excitability, irritability, aggression, inequality of emotions.

### 2. Melancholic Temperament – sad type, daunted type

- positive: intense and lasting emotional processes, perseverance, diligence, responsibility and sense of duty;
- negative: low mobility and adaptability, predisposed to anxiety, low self-esteem and pessimism.

From the point of view of the degree of externalizing and manifesting of elements which make up the temperament, there are two categories: extroverts and introverts.

**Extroverted: choleric and sanguine** temperaments. Extroversion is determined by the general state of excitement of the cerebral cortex.

Extroverts inherit a strong nervous system.

**Introverted: phlegmatic and melancholic** temperaments.

Introverts inherit a delicate nervous system.

Carl G. Jung described individual mental characteristics, thus defining the extrovert and introvert.

**The extrovert:** The **extrovert** type is characterized by externalizing, much louder, one's state of gratitude, joy, sometimes surpassing the required reaction for the experiences phenomenon. He is animated by his interest in the outside world, in people and objects; he is sociable, communicative, with initiative. He has a great practical sense and easily adapts to new life conditions.

**The introvert:** The **introvert** type is characterized by an internalization of his feelings, of reactions to external stimuli and the world around. He channels his energy to his own ideas, to his inner world, creating himself a rich inner universe. He has a good inner attention, abstract and profound thought, decisiveness, manifesting tendencies of isolation and anxiety. The introvert does not cultivate social relationships, he is a contemplative soul, reserved, lacking in self-esteem.

**The ambivert:** The intermediary of the two

categories, he borrows characteristics from both the extrovert and the introvert.

**The creation of** some well educationally articulated **character traits** often marks temperamental determinations.

**Temperament is not the expression of a constitutional type**, but the bio-typological foundation from which character elaboration stems.

### Content, Experiment and Results

Society in its evolution throughout time has used a series of means in order to socialize, to create connections between children, adolescents and youths. From analyzing the means which contribute to developing socializing, we also find dance.

In all societies and levels of civilization dancing has always been a way of connecting people, understanding and rejection between individuals and society.

Also there is a permanent evolution of dancing through rhythms and the technique of steps. Of course, at present we cannot give a negative answer to its evolution, to attract and diversify the dance it being a natural movement in a computerized society.

The daily activity of a teenager at school is between 6-8 hours including the 3-4 hours spent doing homework, is seen as an obstacle for establishing social interpersonal relations, to which the amount of video information at home is added, all this culminating with a much more evident isolation of the teenager.

To counter these aspects both society and the institutions or organizations, counselor offices in schools, dance schools, sports clubs, therapeutic practices and specialized personnel, are searching for solutions to minimize and reduce this phenomenon. By introducing dance into a well balanced curriculum will provide points of attraction.

Most 'dance schools' with classes of high performance dancing have a doctor and an artistic sport psychologist in order to optimize the interactions during the cultural activities and also during the dancing contests and competitions.

From these activities the role of dance in bringing teenagers towards sport, art and beauty and is determining specialists that when promoting the methods for developing the personalities through dance to also include artistic activities with a psychological effect because, dance, is a way of life for teenagers, is plainly visible.

Having this into consideration we have started our hypothesis regarding the role of dance in the development of teenager's personalities, in order to find the best and most attractive artistic dance programs involved in the general assembly of psychological programs keeping in mind the suggested points.

The research wants to contribute to:

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most of the times heterogeneous – for diverse temperaments and types of teenagers and young people in order to create ways of communication between them. Sport activities, modern dance, sport dance, society dance, represent for both teenagers and organizers of these types of psycho-artistic activities, most of the times, the determining points of attraction in selecting and participating to the psycho-therapeutic programs.

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The Questionnaire: there have been questioned both teenagers who already took part in the different psycho-artistic programs and youths who want to become a part of these programs, youths with different ages, temperaments and social status, high school students, students and employees.

The effects produced on the person as an entity and the effects had on the group as a whole and in which the participants are involved for a short period of time after taking a psycho-artistic and dance program were monitored.

The Action of Finding the Results, after the Applied Questionnaire with the purpose of shaping the personality of teenagers by choosing the genre of dance in contrast to their temperaments, the criteria followed were:

- seeing the reaction of the youths when confronted with unexpected situations;
- the power of concentration to overcome a difficult situation;
- development of less active side;
- the active cooperation with the dance partner;
- emotional and expressional implication in lyrical, thematic and romantic dances;
- becoming one with the dance partner, a whole.

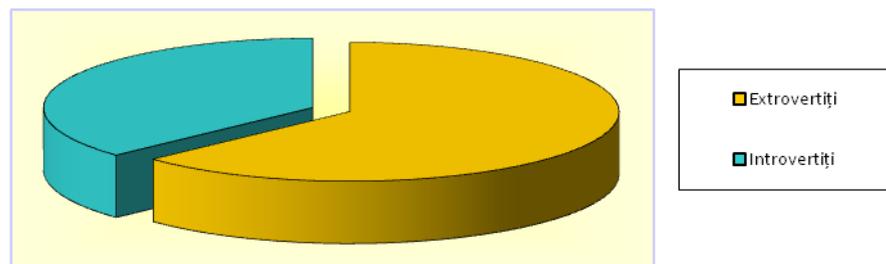
Questioning the teenagers in the dancing halls and of the next participants was done after psycho-artistic programs of relaxation and performance.

For those with a choleric temperament the slow, bohemian, lyrical and ambient dances were chosen; for those with a sanguine choreographic fantasies, contemporary dances; for the melancholic the explosive dances: flamenco, paso doble and thematic dances; for the phlegmatic ones the dynamic dances: fast, energetic, with rapid executions: jive, rock, samba, salsa.

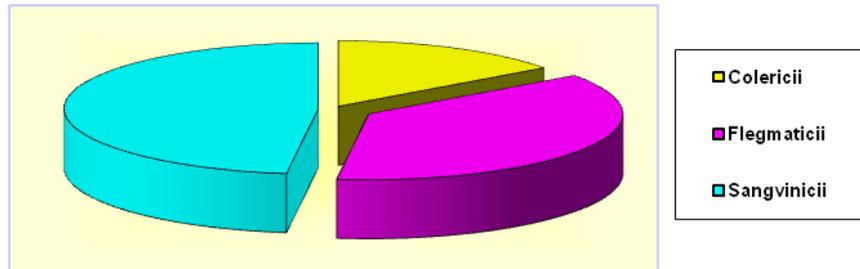
#### Reading the Correlated Results

From the total number of youths subjected to the psycho-artistic tests the results were: 75% are introverts – due to a prolonged ‘relationship’ with the computer and the virtual world and 25% are extroverts familiar with socialization.

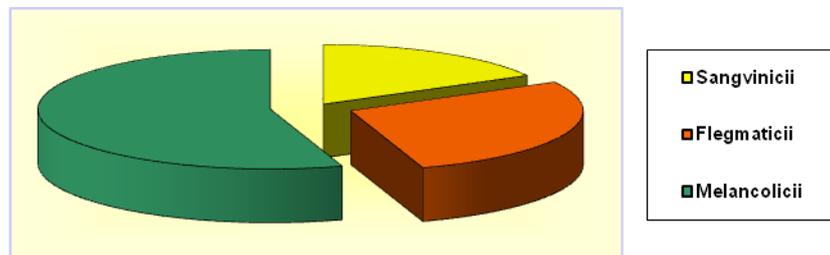
Dances in contrast to their personalities were subjected for a period of time and the results were: 65% of the youths have become extroverts while 35% remained introverts.



For the slow, bohemian dances: 48% were sanguine, 37% phlegmatic and the rest choleric.



For the explosive dances: 17% were sanguine, 28% phlegmatic and the rest were melancholic's.



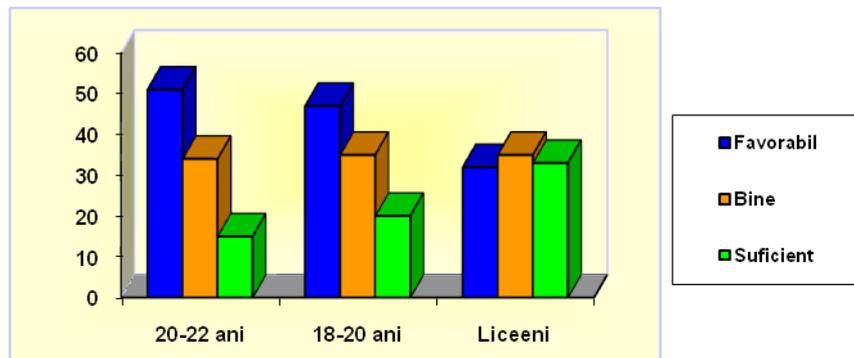
For the choreographic fantasies: 68% were extroverts, 21% introverts and the rest were both.

Teens with ages between 20-22 responded favorably 47%, good 35% and the rest sufficient.

From among those with ages between 18-20 the favorable answers were 51%, good 34% and the rest sufficient.

From among the high school students 32% have responded favorably, 35% good and the rest sufficient.

Thus the explanation for the solitude of some youngsters and for their difficulty in adapting.

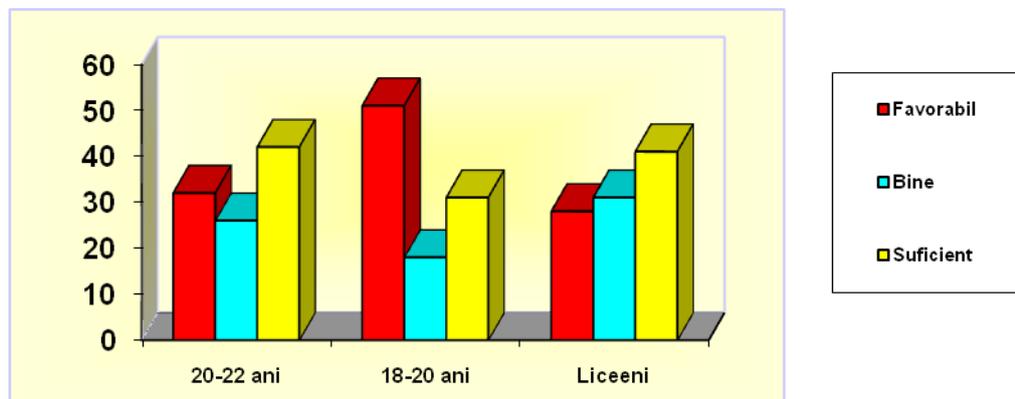


For contemporary dances: 56% were extroverts, 24% both and the rest introverts.

Teens with the ages between 20-22 have responded favorably in 28% of the cases, 31% good and the rest sufficient.

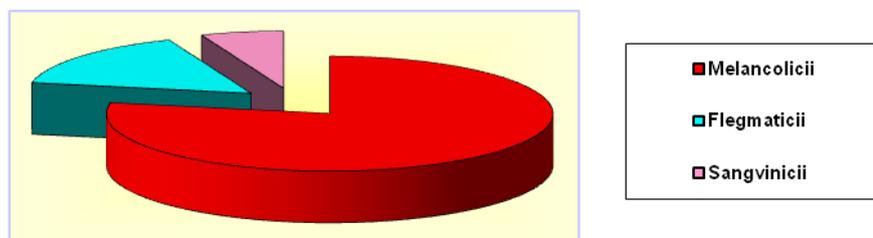
From those among 18-22 51% have responded favorably, 18% good and the rest sufficient.

High school students responded favorably in 32% of the cases, 26% good and the rest sufficient.



For the dynamic dances: 78% were cataloged as melancholic, with pleasure but with some effort, 16% took part under the impulse of their phlegmatic

partners and the sanguine ones, 6%, watched the lessons and the testing from afar.



## Conclusions

Dancing has an important educational element to it, being used as a learning technique for pedagogical and professional performance. From the Educational side of it, it helps build or enhance personality traits and form an upright character with the role of removing any social inhibitions. The Dance as well as the dance floor is a code of conduct, socialization and harmony as well.

Dancing uses the body as its main instrument and this makes the communication with the transmitter much more direct yet unmediated. I find it superb because the way you move shows some personality traits of which you are not conscious of. It shows a mirror of your deep self.

When you see a person dance, you can tell a lot about that person. From the small details unto the temper, character, way of communication and way of being. Dancing is a form of Expressive Art, very honest and direct.

Of course, the body can be educated to express what we desire from it, like an instrument, but he will always betray through movement the intimate traits of the dancer's personality, his temper and his way of being.

The result study shows that dance in its self, the modern dance, is an integrated part of psycho-artistic programs no matter the proposed objectives. Dance programs (modern dance, social dance) make a big

difference when it comes to getting to know the person of a group, the homogenization of the group, the harmonization of the harmonization of the group and the bounds of it.

It is recommended to consult and contact the dance specialists by the organizers of the Psychological Programs in order to make the programs attractive and adequate.

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## THE IDENTITY DOPING: A NEW CONCEPT IN SPORT SOCIAL SCIENCES

POMPILIU NICOLAE CONSTANTIN<sup>1</sup>

### Abstract

*Purpose.* The national and ethnic minorities were represented in every sport communist system. Under the political influence, sport stars from these minorities suffered an identity doping during the nationalism-communism. I define this concept as a mechanism which transforms the identity of sport stars and it is composed of many elements. This phenomenon follows the sport stars from their first days as performers. The identity doping has the mission to build an agreeable image for sport stars and to legitimize with their medals the efficiency of a national system. This mechanism is present during the communist regimes of Romania, Bulgaria or Albania.

*Methods.* I utilize the qualitative and quantitative methods to analyze this concept and the derived phenomenon.

Conclusions. Having many examples from Romania, Yugoslavia, Bulgaria or Albania we can explain a mechanism or a phenomenon called identity doping.

*Key words:* identity doping, communism, minorities, nationalism, sport star.

### Introduction

The communism had an important influence in sport and this fact generated some phenomenon like the “identity doping”. I propose a concept which could explain the transformation of sport stars into national heroes during the communism. It is not a phenomenon which characterizes just the Romanian case, but it is visible also in Bulgaria, Soviet Union or Albania. I try to impose a simple representation for a complex mechanism, with political, social, economic and ethnic value. In such an approach I want to respect some criteria proposed by John Gerring (1999). A very old interpretation sees the signification of a concept like a triangle (Ogden, Richards, 1923). The concept name and its dimension are necessary to have a connotation and a denotation (Dumez, 2011).

The first step is to take a word or many words from a dictionary and to make a research in order to give them a conceptual meaning. Another strategy is to combine these words to have a more suggestive comprehension. I chose to utilize an expression formed by two words and its role is to create a new effect. Another step is to present the definition of this concept. The terminology is essential in social sciences and for this reason I propose a suggestive term with a polyvalent approach. The third criterion for the

existence of this concept is the extension of identity doping, which has to present an empiric correspondence.

In addition to the triangle rule, this concept is ready to respond to other criterion of validation. It is why I consider necessary to utilize the argumentation of John Gerring (1999), who considers that they are no rules to formulate an original concept. Gerring offers some complementary rules for the triangle theory. He proposes eight criteria which help the realization of a concept, after a complex mechanism.

The first criterion is the “familiarity”, which supposes the combinations of terms, that can reveal a phenomenon possible to define. I have chosen the notion “identity doping” because it is a simple construction. This concept is formed by usual words, findable in the current language and it does not complicate the interpretation of this phenomenon.

The second criterion is the resonance of this concept. Gerring affirms that this propriety of the concept comes frequently in conflict with other criteria, and more often with the familiarity. From this point of view, this concept has to present a force of diffusion and impact in the academic literature and for the public. The resonance of the concept is connected with the substantiality of the term.

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The parsimony is the third criteria and this is about the moderation of the concept. The parsimony of the identity doping is trying to be precise and to limit a phenomenon, by defining its start and its ending. One of my objectives was to realize a correct framing for this concept, with definite attributes. In fact, I speak about a balanced notion, with an accurate orientation.

The coherence is the fourth criterion, and maybe the most important. Gerring appreciates that the internal coherence is essential in the same measure as the characteristics and appurtenance of the concept with the described phenomenon. In my case, the coherence consists in the detailed way that describes the identity doping in the sport world. The visible transformation is present in the case of non-Romanian sport stars. It is known that there are concepts with problems of coherence, such as ideology, but its refinement is accepted. I propose a concept which is perfectible, but in the same time I consider it is necessary in this type of discussions. My concept exemplifies more easily a complex phenomenon, specific for the sport studies, which wasn't analyzed very much by the social sciences. In the same time, I consider that it is possible to utilize this concept for other domain of the society, not just for sport.

The differentiation is a "must" in my concept and it is also a criterion mentioned by Gerring. From this point of view, the identity doping is different from other concepts which bring in discussion the idea of doping or the concept of identity. Usually, the term "doping" is utilized more in his biological sense and the concept of identity manifests many directions of interpretation. These two notions have common points, but the word doping makes the difference between the identity transformations. We could define the "identity doping" in relation to what it is not; compared with other concepts and we could find his free space in theorisation. We affirm here the spinozist principle „omnis determinatio negatio est", which means that to define a concept is to oppose to something to another thing.

The depth is another characteristic for every concept, in Gerring opinion. This depth means in fact the properties which define the phenomenon represented by the concept. The criterion offers in this context a rich list of expressions. The concept has to be expressive and to generate an implication. The term must be descriptive and strong in his capacity to speak about this subject.

The theoretic utility is essential for the identity doping. This concept could serve to build theories and to explain a historical mechanism. This concept creates a theory itself and describes a phenomenon. It has a methodological endurance (Gerring, 1999). In the same direction we can affirm another quality necessary for this concept, its utility for the semantic field. Gerring wrote that every time a word is redefined, this aspect transforms the semantic field with other redefinitions for other words. This type of activity makes the

semantic field a very active territory, but in the same time with many restrictions and necessary debates.

In this tentative to define the identity doping we have the risk to commit many errors, identified by Hervé Dumez and Ludwig Wittgenstein. It is not recommendable to reduce artificially this concept to a simple definition. In the moment when you propose a concept it is a question of language, because a concept like this couldn't have a precise and rigid definition. I affirm this because the "identity doping" is an interdisciplinary result. Wittgenstein says that the borders of language are fragile and for this reason it is hard to have an untouchable concept and this generates discussions (Wittgenstein, 1996). The perfect definition does not exist, says the same author.

**Definition.**The ethnic tensions and the problems provoked by the nationalism-communism determined the phenomenon of "identity doping". The political influence and the forced integration of ethnic and national minorities are to the origin of identity doping. I have identified many common elements which create a mechanism for the identity change. The communist regime has a problem with the ethnic groups in many states, like Romania during the time of Nicolae Ceausescu. The internal realities of many countries with a nationalism-communist regime influenced the life of sport stars. In a state like Romania, where the groups of minorities had an important role in sport development, sport stars from these communities are promoted like national heroes utilizing the mechanism of "identity doping".

I propose a concept starting from the Romanian case, but which is useful for the social sciences in other ex-communist countries, like Soviet Union, Bulgaria or Albania. Here the nationalism is present and the ethnic presence in sport was regarded as an essential problem. It is a specific attitude for the ideology of the Romanian Communist Party towards the sport stars from Hungarian, German, Russian or Jewish groups.

The practical realization of this concept is simple and logic. The linguistic construction is the result of a two words stick. The concept of identity doping is formed after putting in the same formula the substantive doping and the adjective identity. Their alliance suggests very well the fact the identity suffers a transformation. This alliance of words explains the existence of a political system with an interest towards the sport stars and their role in the society. Behind this artificial construction stands a structure of ideas, different significations, actions and emotions.

The identity doping is a problem of ethnic-social engineering, represented by a sum of actions which modify the sport star identity during the totalitarian regime. The identity dimensions (family, school, social relations, politic passions) were under the pressure of the communist regime.

The identity doping concept has like central subject the identity, but in the same time the term of



doping is important. The word doping comes from the English notion „to dope”, meaning to take an exciting. This term has appeared in 1903 and his first references were about the animals. After the 30s it becomes a procedure for the athletes. In the 50s definition, the words from the doping family mean stimulate, modifiable or exciting (Larousse, 1950). The law for the French doping from 1 June 1965 characterizes the doping like a process „designed to increase artificially” different parameters.

Sport is an instrument for the progress cult and for the desire of success in communist countries and this type of approach is creating the opportunity to utilize the doping. It is not just a chemical doping, but also an ideological one and here we place the „identity doping”. The concurrence between countries imposes the necessity to expose sport heroes. The high performance sport implies some needs for the East-West rivalry and the doping facilitates these performances. For this reason in the communist case I propose the concept of identity doping, starting from the physical type of doping. In fact, the chemical doping and the identity doping suggest the idea of perfection, starting from the fact that „the high performance sport put on the scene the secular dream for the „perfection of the species” and the doping comes to complete the palette of technics available”. The identity doping is a larger comprehension of this phenomenon in a figurative way. The political system claims in this sense the unity of the nation.

The doping is not just a problem of public health and its meaning is becoming larger. The identity doping indicates in fact a variety of connotations which suppose some mutations on personal and professional plans. In sportive context, the doping is defined like the utilization of substances or methods used to increase artificially the practical capacity of a person. Doping is a social attribute, a problem for the society, a phenomenon perceived like a social malfunction (Spector, Kitsuse, 1987). In the same time, doping implies a mobilization of resources (material, sentimental, ideological).

Patrick Laure says that the doping behaviour is observable. This activity is defined by the consummation of a product for facing or passing a real obstacle (Laure, 2000). Translated and transferred on the field of political competition, where the problem of ethnic and national minorities is a reality, the communist chiefs apply a doping tactic for the identity of sport stars with an origin in these minority communities. The goal is to have the image of national champions and to claim their national origin and the efficiency of a national sport system of preparation.

This concept wants to reveal the preoccupation of communist regime to impose the type of a new identity in sport, regarding the social aspects. I chose as an example the Romanian case and in a particular aspect the Nicolae Ceausescu period (1965-1989). In the same time, after Patrick Laure opinion,

the chemical doping has an important level of intensity and specialization (Laure, 2004). This period is similar with the most obvious identity doping in Romanian sport during the communist regime.

Regarding the phenomenon in general we can affirm that the sport star is a victim in this mechanism. The identity doping like the other kind of doping, the physical one, provokes a discomfort sensation (Van Hilvoorde, Vos, de Wert, 2007). The sportive authorities are also responsible for the existence of this mechanism and they are assuring the deployment of these actions determined by the political orientation. Like the chemical doping, the identity doping is eliminating some obstacles utilizing media, the essential factor of information. The obstacles could be the name of the sport stars in their intrinsic sense, the ethnic origin, their social potential or their economic rights. This concept describes in the same time the attitude of political regime as against the possible starization or the influence of some sport heroes in their communities. The idea of appurtenance to a group was regarded with circumspection by the regime, and the fact that one sport star is a hero for his ethnic community is stimulating his consciousness and their unity creates this reaction integrated in the idea of identity doping. The identity doping has like objective the cancellation of this type of feelings. Like the principle „divide et impera”, every sport star from minorities is susceptible to be implied in this mechanism described by my concept name.

Like the chemical doping, the identity one is applied for all the type of sport stars, not just the champions, but also for representative athletes to the regional level, members of national teams with a good impact in public eyes or even some coaches. Doping realizes the transformation of that we call „natural” in „artificial”. In the same direction of speaking, identity doping contributes to the „artificialization” of the sport star identity. The athlete suffers a transformation under the influence of the political regime constraints. In the Romanian case, the system tries to impose an artificial identity and to create the type of „new sport star”, extending the idea of „new man”.

How does the identity doping work? How do the sport stars react? These are some essential questions for this concept. Like the physical doping, the identity doping is difficult to identify. In this direction is important to mention an observation of Bird and Wagner, who consider that „doping is an incoherent practice, difficult to define and to observe”. The only hope in this case is the honesty of the sportive (Bird, Wagner, 1997). The same principle is valuable for the identity doping, but in this case the honesty is not a proper solution, because the sport star depends on the system, which takes action against him. The pressure which exists in the political space and the ideological dimension action in sport and the administration is forced to respect the line of nationalism-communism.



In this context, the identity doping offers the image of inferiority for the sport star. Many athletes are accepting this situation and are embracing the new political system without any doubts. The patriotic attitude solicited by the political regime is obligatory, but in the same time, many sport stars show excessive zeal and they contribute to this identity doping phenomenon.

How does this concept function in a visible way? First of all, the sport star is born in his ethnic community, where he comes in contact with traditions, conceptions and he take some attitudes. In the same moments he is capable to utilize his ethnic language and he forms a perception related with the majority. Then, he enters in the sportive system, where he starts to make performances. From this moment, he is under the influence of sportive homogenization. Every performance is related with the communist merits and its efficiency. From this moment on the identity doping wears a bureaucratic aspect. Confusions between nationality, ethnic belonging and citizenship are regular in the official papers. Many sport stars are presented like Romanians, even their ethnic origin is not Romanian. This aspect is more visible, in the Romanian case, in the Nicolae Ceausescu period. The Yugoslavian case is more special and these consequences in sport are visible after the fall of communism and the separation in many countries. For example, the Croats were unable to express their attachment for the sport stars that evolved under the Yugoslavian flag during the communism, but in these days they are trying to compensate that aspect (Sack, Suster, 2000).

I have to add that the identity doping concept is large and for this reason is difficult to impose an ideal-type definition. I will try to calibrate and to frame it in some conceptual limits. I suppose that for its existence it is necessary for sport to be under the surveillance of the state politic. This phenomenon is synonymous with a forced integration but in a special manner. The sport stars are the main target in this process and the need of the communist regime to legitimate their performances in its politic.

The level of nationalism is fluctuating in the communist countries, but this aspect doesn't block the similarities of identity doping in these cases. From Stalin regime, to Tito or Ceausescu, all of them had imposed a style of nationalism and a type of homogenization, even in sportive field. The importance of sport and the necessity to expose its own national heroes put the communists in a position to interfere the performance purpose with the identity of the sportsman. In this sense the so-called sportive nationalism appeared a phenomenon which proclaims the supremacy of a nation in sport.

The identity doping codifies an entire process of transformations, social pressure and political influence in a society dominated by history of present, where the heroes are in the service of nation and her

leaders. The sport star is a symbol and for this reason, the media and all the other channels of communication are focused to create a proper image for the ethnic minority's champions. This is not an official procedure, and for this reason it is hard to precise all the limits of the identity doping. The sport star that doesn't belong to the ethnic majority is embellished and his image and speech has to be for the interest of the country and its tradition. In this direction we can analyse the expression of „temporary” national identities (Hunter, 2003), where the sport stars or the coaches accept themselves to represent another country and they identify with the new situation.

### The Romanian Case

The first days of communism bring a multicultural perspective over the Romanian sport. The sport stars are from different ethnic minorities and their concentration is in the most important city of the country: Bucharest, Timisoara, Oradea, Arad, Cluj, Iasi, Constanta, etc. Many ethnic groups have their own clubs. The Romanian communist regime copies the soviet system regarding the sport and in several years these ethnic clubs disappeared. Even the Communist Party is affirming the internationalism politic and the ethnic and national groups are considered equally important as the Romanian population. The idea of “cohabitant nationalities” is function until the middle of the 50s.

In general lines the identity doping is visible from the 60s. Even in that period sport stars from national minorities are presented like national heroes. An example is the table tennis player Angelica Adelstein Rozeanu, with a Jewish origin. She was many times world champion in her domain, but her origin was omitted constantly. In fact the Jewish community had an important number of table tennis players before the communism and Angelica Adelstein Rozeanu was a sport star in that period. She was presented in press just like Angelica Rozeanu, because Adelstein was too Jewish. The communist regime imposed a constant pressure on her shoulders and forced her to make propaganda for the regime. Having a problem with her identity and being impossible for her to adapt to the situation after the retirement. She will go illegal in Austria and then in Israel, where she lived until her death.

The same context was built for the gypsies. Their statute is hard to be observed during the communism, because their nomadism was treated in silence. We know just few names for sport stars from gypsy community: Mihai Niculescu and Necula Răducanu. The first one is known for his ethnic origin, just from CNSAS Archives, because in other contexts he is known as Romanian. It is very difficult to make the difference between gypsies and Romanians. Necula Răducanu is an exception, because he recognizes his ethnic origin. More than that, he succeeded to speculate this aspect in his favour. Necula Răducanu represented



the image of „good gypsy” during the communism and he was the goalkeeper of national team of Romania for more than 60 matches.

Another case of identity doping is the biography of Kati Szabo, the Romanian gymnast from a Hungarian family. She was presented in competitions with a more Romanian name, Ecaterina Szabo, even in her identity card was the name Katilin Szabo. More than that, the political chiefs proposed her and her mother to change the gymnast family name from Szabo to Sabău. Like gymnast she was forced to accept a military system of preparation. Kati Szabo speaks Hungarian just with her family and after every victory she is obliged to praise the communist merits.

All of them are presented like national heroes and their identity suffers transformations under the politic pressure. The ethnic origin of these stars was seen like an obstacle for the national identity. For this reason, these sport stars are forced to integrate in some parameters. They are seen like Romanian citizens, but in the same time, they have to accomplish the standards for „Romanianess”. The success of this process reveal the fragility of the ethnic identity during the communism, even we refer to sport stars. Paul Ricoeur says that this fragility is vulnerability exploitation for a rigid system like the communism (Ricoeur, 2000). The Romanian communism demand a total dedication from these sport stars and their identity doping in their cases is synonymous with the promotion of national value in every moment, not just for 60, 80 or 90 minutes, during their matches.

Nicolae Ceausescu period is marked by an effervescent nationalism and a clear attitude beside minorities (King, 1980) and for this reason the identity doping provokes the tendency of escaping from the country. Many sport stars put their life in danger and leave their family in Romania. Some important sport stars are staying in other countries and demand political asylum. They find proper to complete their identity in other countries. Many Germans from Romania chose to remain in West Germany, some sport stars with Jewish origin arrive in Israel or France and the examples can continue. These are some consequences of identity doping action in Romania.

### Conclusions

The identity doping is an artificial construction, but in the same time very suggestive if we take in discussion sport and its ethnic implication during the communism. A consistent increase of the population implication in this domain provoked many problems and when a political regime wants to promote national values, this mechanism of identity doping starts to function. The political discourse suggest some hidden actions against sport stars, revealed later by

these athletes or which can be identified studying the secret services archives.

Changing names, integration through marriage or the compulsoriness to promote the idea of „Romanianess” are just few elements and steps that help us to understand better the phenomenon of identity doping. This concept can open a large champ of debates about the necessity of its existence in the social sciences sport literature. The presented ideas can be an important sign that this domain could have its own concepts regarding the communist zone and could explain better the nationalistic influence in these countries and the influence over the sport.

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## THE ADMINISTRATION OF NANDROLONE DECANOATE MAY CAUSE MULTIPLE ORGAN FAILURE

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### Abstract

*Aim.* In this study, it was aimed to investigate the effect of anabolic androgenic steroid nandrolone decanoate (ND) which commonly used for doping by sport players, on the relative weight of liver, spleen and gonads in male and female rats.

*Methods.* For this purpose, 60 rats (male =30, female =30) were used. Rats were divided into three groups as control group (0.5 mL 0.9% physiological saline, intraperitoneally (IP), peanut oil (PO) group (0.5 mL, IP) and ND group (10 mg/kg ND diluted in 0.5 mL peanut oil, IP). All injections were made daily for five days with a break for 2 days per week throughout the four weeks. The rats were euthanised at the end of the experiments and the relative weight of liver, spleen, testicle and ovaries were measured.

*Results.* It was determined that relative weight of liver in male rats and the relative weight of spleen in both male and female rats in ND groups were lower than those in control group ( $p < 0.05$ ). Moreover, it was found that the administration of ND increased the relative weight of testicles as compared to control group ( $p < 0.05$ ).

*In conclusion,* it is suggested that the decrement of relative weight of liver and spleen and the increment of relative weight of testicles may be an indicator for individual multiple organ failure and damage following long term administration of ND diluted in peanut oil.

*Keywords:* Nandrolone, liver, spleen, testis, ovaries.

### Introduction

Hormones, described as androgens and synthesized from leydig cells of testes, are testosterone, androsterone and dehydroepiandrosterone (DHEA) (Stryer 1988, Yilmaz 1999).

The inhibition and stimulation of synthesis and release of androgens are provided by adenohypophysis origin hormones such as luteinizing hormone (LH) and follicle stimulating hormone (FSH) (Löffler and Petrides 1988). Testosterone and other androgens play a key role in the growth and development of the body by increasing protein synthesis, decreasing aminoacide and protein catabolism or preserving the nitrogen in fat-free body mass (Guyton and Hall 2001, Kuhn 2002, Kayaalp 2005, Gül 2008). Anabolic androgenic steroids (AAS) are synthetic drugs that have similar effects to testosterone (Kochakian and Yesalis 2000, Khun 2002). Recently, more than one hundred AAS drug has been developed. AAS drugs are sold by prescription in USA but in some countries, they are illegally sold. Oral administration of oxymetolone, oxandrolone, methandrostenolone, stanozolol and parenteral administration of nandrolone decanoate, nandrolone propionate, testosterone spionat, boldenon andesilenat are commonly abused AAS drugs (Evans 2004). Nandrolone (19-nortestosteron) is one of the most used AAS drug (Aksoy and Dağoğlu 1998, Verroken, 2001, Kuhn 2002, Maravelias et al ark 2005). Nandrolone is produced by elimination of C-19 methyl group from testosterone and its chemical name is 17 $\beta$ -hidroxy-19-norandrost-4-en-3-on (Furman

2007). Nandrolone decanoate (ND) is the conjugation of nandrolone and decanoic acid. This formation provides the high availability administration of ND such as both intramuscular and subcutan injection (Van der Vies 1993, FASS 2002, Furman 2007). Deca-Durabolin<sup>®</sup>, the injectable form of ND which is recently produced 25-200 mg /ml dose range under different brand names (i.e. Anaboline, Hybolin Deconoate, Elpihormo, Extraboline, Nandrolone Dec, Jebolan, Nurezan, Retabolil, Retabolin, Turinabol Depot etc.) in many countries, has been introduced into market in 1960s (Furman 2007).

AAS drugs cause ethical problems when they are used to increase performance by sport players in competitions, however uncontrolled usage of AAS may also induce serious side effects such as cardiovascular system failure, prostate gland diseases, lipid metabolism failure or insuline sensitivity (Bhasin et al 1996).

It has been reported that the application of ND have beneficial effects on bone tissue and the treatment of hip fracture in elderly patients, however it has different effects on proencephale, frontale, parietale and cortex parts of male rat brain (Kindlundh et al 2003, Tengstrand et al 2006).

The aim of the present study is determine the effect of nandrolone decanoate administration on relative organ weights in male and female rats.

### Materials and methods



In this study, 30-day-old, 60 Sprague Dawley rats which were obtained from Experimental Medicine Research and Application Center Selcuk University,

weight of rats which were euthanised at the end of the experiments by cardiac puncture. The statistical analysis was performed by SPSS 13,0

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were used. Rats were fed *ad libitum* with the same commercial rat diet. The ethics committee of Selcuk University, Faculty of Veterinary Medicine approved all procedures. Rats were randomly assigned to three groups of 10 male and 10 female rats each as follows; negative control (0.5 mL normal saline solution, IP), positive control (0.5 mL peanut oil, IP) and experimental (ND) (10 mg/kg within 0.5 mL peanut oil, IP) groups.) All injections were made daily for five days with a break for 2 days per week throughout the four weeks.

The mean body weight which was measured weekly from the beginning to end of the study, was used to recalculate the dosage of ND. The relative organ weights (% g) were calculated by proportion of weights of liver, spleen, testis (left and right) and ovary to body

(SPSS 13,0 for Windows/ SPSS<sup>®</sup> Inc, Chicago, USA) and the results were expressed as mean ± SE. The results between groups were analyzed by ANOVA and Duncan's multiple range test. Independent *t* test was used to evaluate the results between male and female rats. In all cases, a probability of error less than 0.05 was selected as criterion for significance.

### Results

The relative organ weight of liver, spleen, testes and ovary obtained end of the study is given at Table 1 and 2, respectively. It was observed that a decline of relative weight of liver and spleen was evident in ND group as compared to control group, however relative weight of left and right testes increased, whereas the relative weight of ovary did not change.

**Table 1.** The relative weight (% g) of liver and spleen following nandrolone decanoate administration in male and female rats (mean±SE).

Parameter (% g)	Control Female	Control Male	PO Female	PO Male	ND Female	ND Male
Liver	4,67±0,10 <sup>a</sup>	4,35±0,10 <sup>b</sup>	4,29±0,11 <sup>b</sup>	4,21±0,08 <sup>bc</sup>	4,28±0,06 <sup>b</sup>	3,96±0,06 <sup>c</sup>
Spleen	0,38±0,01 <sup>a</sup>	0,34±0,01 <sup>b</sup>	0,33±0,01 <sup>b</sup>	0,26±0,01 <sup>c</sup>	0,25±0,01 <sup>c</sup>	0,20±0,06 <sup>d</sup>

ND: Nandrolone decanoate, PO: Peanut oil. <sup>a, b, c</sup>: Superscripts with different letters in the same row differs significantly (p<0,05).

**Table 2.** The relative weight of testes and ovary following nandrolone decanoate administration in male and female rats (mean±SE).

Parameter (% g)	Control	PO	ND
Left Testes	0,76±0,04 <sup>b</sup>	0,98±0,05 <sup>ab</sup>	1,16±0,05 <sup>a</sup>
Right Testes	0,76±0,03 <sup>b</sup>	0,95±0,07 <sup>ab</sup>	1,12±0,05 <sup>a</sup>
Ovary	0,03±0,01 <sup>a</sup>	0,03±0,01 <sup>a</sup>	0,03±0,01 <sup>a</sup>

ND: Nandrolone decanoate, PO: Peanut oil. <sup>a, b</sup>: Superscripts with different letters in the same row differs significantly (p<0,05).

### Discussion

It has been reported that liver disease and damage occur in patients using AAS drugs for the treatment, as well as in sport players using abused AAS drugs. (Gragera et al 1993, Bronson and Matherne 1997). The most common liver abnormalities are subcellular changes in hepatocytes, cholestasis, peliosis

hepatis, hepatocellular hyperplasia, carcinomas and general liver dysfunction (Hartgens and Kuipers 2004). It has been indicated that the damage in liver following AAS administration is seriously harmful, when high dose of C-17 alkile androgens (i.e.Oxandrolone) is orally used. Therefore, sport players minimize the use of this kind of androgens because of the oral administration of AAS cause liver tissue damage due to



hepatocellular metabolism of orally taken AAS to the gastro intestinal system and increasing resistance of hepatic inactivation to high dose AAS (Rahusen ve ark 2004).

There are limited reports related to morphological changes in liver following AAS administration, although there are numerous studies reporting the level of different liver enzymes. Vieira et al (2008) observed that the amount of collagen importantly increased in parenchyma of rat liver, following above the pharmacological dose of ND along five weeks, while Gerez et al (2005) reported that liver weight of ND administered rats was higher as compared to control. Similarly, Karbalay-Doust and Noorafshan (2009) reported that liver weight of ND administered rats increased at the rate of 19-36%. However, Yu-Yahiro et al (1989) observed that the liver weight of ND administered rats was lower as compared to control groups at the sixth week of the ND application. In the present study, the decrement of relative liver weight of ND administered rats was consistent with the observation of Yu-Yahiro et al (1989) and it is suggested that this decrement may be due to the type of anabolic steroid, the form and duration of administration of the drug. Although there have been limited reports indicating the effect of AAS administration on spleen weight, Uhlén et al (2003) reported that ND administration did not alter the relative spleen weight and it is suggested that the reason of decreasing relative spleen weight may be due to the form and duration of administration of the drug.

In studies performed to investigate the effect of AAS on the histopathology of reproductive organs, it has been reported that during maintenance of spermatogenesis, the normal structure of spermatozoid changes and the motility and the density of spermatozoid decreases (Holma 1977, Knuth et al 1989). Takahashi et al (2004) observed that the administration of AAS caused serious morphologic disorders in testes, whereas Shah (2010) reported that the weight of testes and epididymis in rats decreased following ND administration Noorafshan et al (2005) reported a decline in testes volume and in seminiferous tubule length on 14<sup>th</sup> week of ND administration. However, the authors indicated that the decline in testes volume and weight following high dose of ND administration was not observed following low dose of ND administration, whereas the testes weight increased. Dong-Mok et al (2010) reported that oral administration of ND did not alter the testes weight in rats, similarly, Feinberg et al (1997) observed that pre and postpubertal injection of testosterone propionate did not affect testes weight. Minkin et al (1993) described that the administration of 10 and 50 mg ND increased body weight, diameter and weight of kidney at the end of 8<sup>th</sup> week of the experiment. In the current study, it was observed that ND administration increased the left and right testes weight and this finding was in accordance with Minkin et al (1993) and

Noorafshan et al (2005), while this finding was inconsistent with some reports. Therefore, it is suggested that the discrepancies in the increasing testes weight obtained in this study as compared to other studies may be due to the application form and dose of ND (Noorafshan et al 2005) and the puberty age of the experimental animal.

In studies performed on female rats, it has been indicated that AAS applications cause disorders in oestrous cycle and delay the beginning of puberty by affecting FSH synthesis as same as LH synthesis in male rats (Gerez et al 2005, Mobini Far et al 2007). Moreover, it has been detected that vaginal oestrous in rats is suppressed in two weeks following ND administration (Blasberg et al 1997). Although it has been detected that ND administration increases uterine weight and endometrial thickness (Obasanjo et al 1998), causes physiological and morphologic differentiations in rat uterus (Mobini Far et al. 2007), affects the ovarian weight (Camargo et al. 2009), Gerez et al (2005) reported that ND administration did not alter the ovary, uterus and hypophis weight. However, Bronson (1996) detected that AAS applications in female mice decreased the ovary weight. The absence of difference between relative weight of ovary as shown in the results of the present study was consistent with Gerez et al (2005) and it is suggested that the oestrous synchronization of rats is needed to obtain more reliable results.

### Conclusion

New studies which include ND administration in long term and at different dose ranges are need to clearly detect the organ damage, besides, it is suggested that more reliable results may be obtained by supporting the findings with histopathological data.

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## RELATIONSHIP BETWEEN PSYCHOLOGICAL FACTORS OF PERSONALITY AND PERFORMANCE OF FOOTBALL REFEREE

VOBORNÝ JIŘÍ<sup>1</sup>, ZEMAN TOMAŠ<sup>2</sup>

### Abstract

*Purpose.* Influence of psychological load connected with match on mental state of football referees was assessed. The purpose of this study was to evaluate changes of subjective psychological experiences and states of football referees during football match and to find out about any regularity of these changes.

*Methods* Two standardized questionnaires were used: SUPSO and Belov temperament test.

*Results* It has been proved that psychological state of football referees before the match has statistically significant impact on their psychological state evaluated immediately after the match.

*Conclusions* Regulation of negative pre-match mental states of football referees is an important factor of successful coping with the supervised match on a psychological level. Psychological preparation of referees therefore contributes to improving their performance.

*Key words:* Football, referee, psychological experiences, psychological states, temperament, SUPSO

### Introduction

Football is a game which attracts millions of players and fans all over the world. From the long-term historical perspective referees represent an integral part of the game. We can often see some kind of aggression towards the referees, which usually stems from a feeling of injustice in connection with some of the referees' statements and subsequent frustration of potential aggressor (Tod, Thatcher, Rahman, 2010). Each of us deals with these problems individually it is not possible to follow some simple "instruction". However, we can use already acquired knowledge as a basis to recommend using techniques to cope with stressful situations, such as coping strategies (Vašina, & Strnadová, 2009). Methodical material Booklet for referees issued before the World Cup in Germany (Lopez, Falcó, 2006) represents some kind of guidance. In our research, we examined the dynamics of

subjective psychological experiences and states of football referees (Voborný, Zeman, Blahutková, 2012) and mutual dependency of components of their current mental status both before and after the match (Voborný, Zeman, 2012).

### Methods

Our research set consisted of 26 referees, all of them were men. These referees supervise competitions governed by the football association of Vysočina county, which is one of 14 counties of the Czech Republic. The first bar chart (Fig. 1) shows the length of the practice of referees in our research set. It is clear that the biggest group is represented by referees with length of practice between 5 and 10 years (14 probands), followed by group with practice from 10 to 15 years (7 probands).

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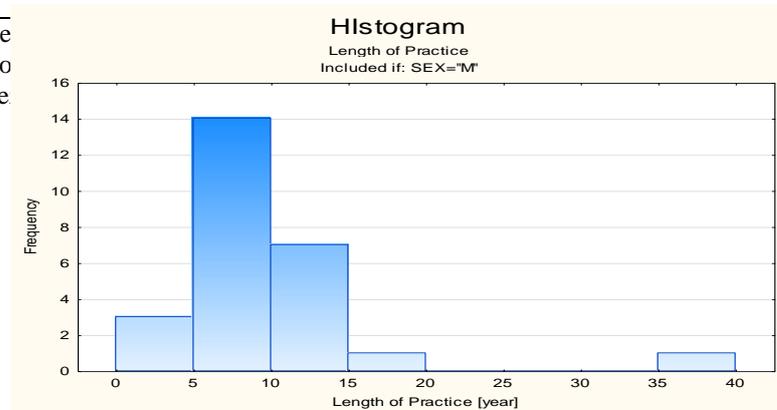


Figure 1. Graphical demonstration of the practice length of the reference group of football referees

In order to understand better the personality of the referee and the dynamics of their experience, we examined contribution of each component of temperament in football referees using Belov's temperament test. This test (in Blahutková, 1999) uses the basic standard personality theory of four temperament types: choleric, sanguine, phlegmatic and melancholic. It also works with combinations of these basic types, e.g. sanguine-choleric type. In case of these combinations the first is always the dominant temperament type (i.e. the type which was more often represented in the results). Belov's temperament test

consists of 79 questions - claims divided into four groups. These are actually sets of manifestations characteristic of each temperament type. The task for the test proband is to decide whether each claim is true or not, and their responses are recorded in the recording sheet. If the statement is true for the person, the answer is YES. Otherwise, the answer is NO. In the second box plot (Fig. 2) we can see the percentage of these components. Sanguine component is most often represented, followed by phlegmatic and choleric components. Melancholic component is significantly less represented.

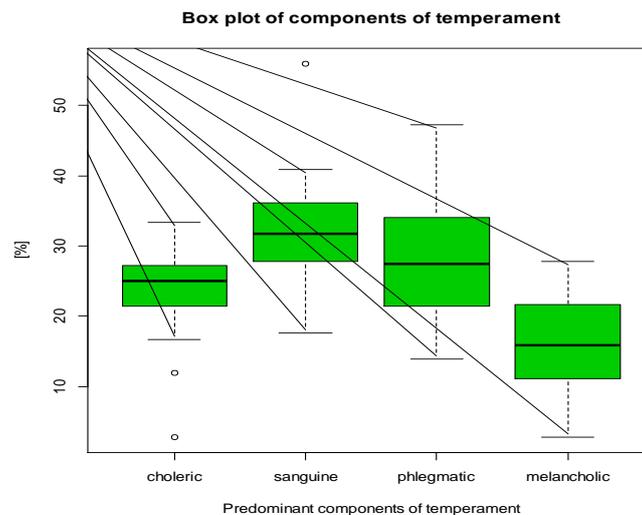


Figure 2. Box plot of the percentage of personality temperament components

The standardised questionnaire SUPSO made by prof. Oldřich Mikšík was used to describe the dynamics of subjective experience and personality states of referee before and after the match. Questionnaire SUPSO is used to describe and evaluate the dynamics of subjective experiences and personality states (Mikšík, 2004). Mutual interaction of proband with their external and internal environment is reflected in their mental state. Mental state can be described in its overall, integrated structure using the proportional representation of each component. The measured components of mental state are:

P = psychological well-being (feeling of satisfaction, a pleasant mood and pleasant mental warm-up, which is often accompanied by feelings of euphoria and confidence). This component shows a degree of freshness, satisfaction, peace and mental balance, optimism and good mood.

A = activity, vigorousness (feelings of power and energy which are associated with a hankering after the action). It is a readiness for active interaction among various situational variables. It can be described with the qualities of psychological phenomena, such as vigorousness and assertiveness.

O = impulsiveness, letting off steam (uncontrolled, spontaneous release of energy stress and mental tension). Described by feelings like moodiness, difficulty in self-control, explosiveness, irritability and uncorrected aggressiveness.

N = mental restlessness, discomfort (experiencing psychological stress, when it is not possible to find ways to release it). Characteristic symptoms are mental and motoric restlessness, annoyance, discontent, impatience and restlessness.

D = mental depression, tiredness (complex of feelings and states, of which the main characteristics represent a tendency towards passivity and apathy).

U = anxious expectations and fears (complex of feelings of insecurity, experience of psychological, tension, feelings of anxiety, fear of the possible future consequences, etc.). Experiencing possible future development is being updated within inner experiences, but there is lack of readiness to deal with situational components.

S = sadness (these experiences can be expressed by adjectives sad, lonely, hypersensitive, unhappy). It can be defined as a passive experiencing of situational variables. Experiences are not turned out to interact with the outer environment, but "inside".

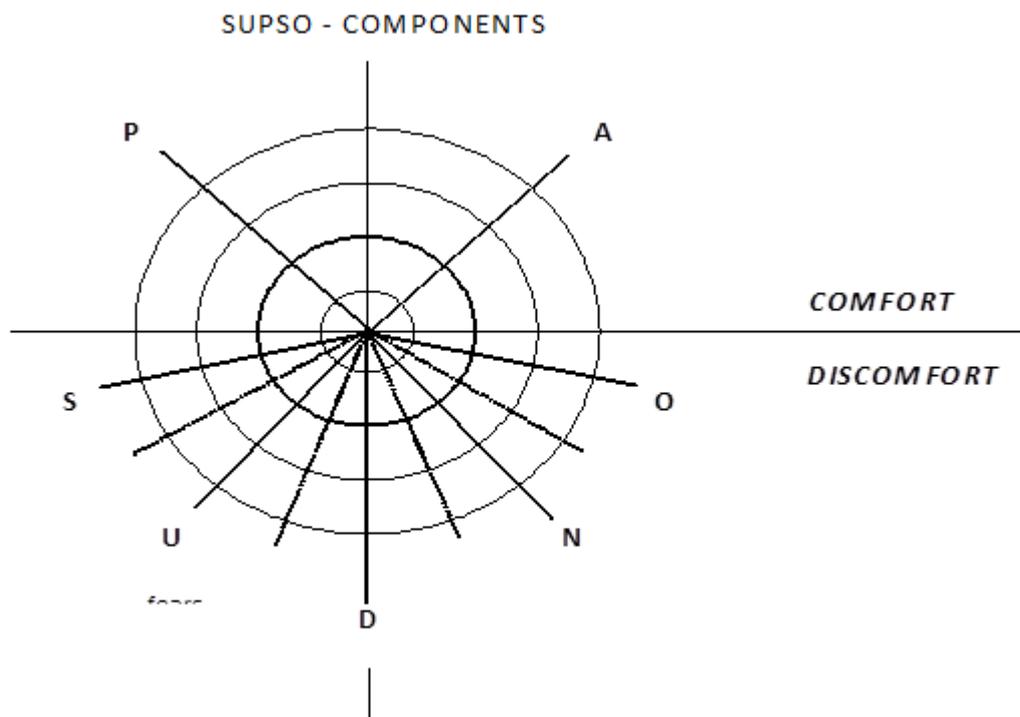


Figure 3. Target graph showing subcomponents of mental state measured by a standardized questionnaire SUPSO

The results obtained via the test SUPSO can be graphically represented and interpreted using the target

graph (Fig. 3). Circle, which is marked in bold line connects average values of mental state in population.



The horizontal axis divides the target graph into upper and lower half and the vertical axis divides it into the left and right half. The intersection of the horizontal and vertical axes forms the centre of all the circles in the graph. The vertical axis divides the components of experiencing (upper left quadrant) and activation (upper right quadrant). The scale of depression and exhaustion occupies the interfacing (right-left) neutral position. The horizontal axis separates the components of experiencing psychological well-being, of which are typical: positive mood and excitement to the activity (upper left and right quadrant) and components of psychological discomfort, of which are typical: unpleasant or demobilising mood and arousal (lower left and right quadrant).

In spatial analysis of obtained correlation matrix the method of principal components analysis (PCA) was used. Principal Component Analysis is a method of multivariate data analysis (Hebák, 2005, Hendl, 2009). Its primary aim is to reduce the number of variables. This is achieved by creating so-called principal components, i.e. newly created variables which are independent of each other and put together they explain all the variability in the data set. The first principal component is constructed to have maximum variance, i.e. to explain the biggest proportion of the total variability in the data file. The second principal component is created in the same way and it must be perpendicular to the first principal component, i.e. it is independent of it. In analogous manner we obtain another principal component. The first principal component captures the most variability, the second principal component and each other then explains always slightly less amount of variability than the

Mathematically, equations of the principal components are obtained as a linear combination of the original variables, where coefficients of these combinations are given by coordinates of eigenvectors of covariance matrix. Eigenvalues of this matrix represent the variance explained by the respective principal component. The sum of the eigenvalues equals the sum of variances of the original variables. Number of considered principal components is chosen according to the amount of explained variability which is sufficient for our objectives. Usually, it is required that the used principal components together explain at least 70% of the total variability of the data set.

In our research, we primarily engaged in testing hypothesis in which we assumed that the current mental state of football referees before the match affects their ability to cope with mental burden represented by a completed match.

### Results

#### *Correlation analysis and Principal component analysis (PCA)*

There were statistically significant correlations found, especially between components of anxiety before the match and depression after the match (Table 1). Another statistically significant dependency was confirmed in mutual correlations of components of psychological discomfort and melancholic temperament components (Table 2).

For describing relations between the variables Principal Component Analysis (PCA) was used. Correlations of original variables of current mental states with newly created principal components are shown in the chart (Fig. 4). We tried to interpret the

Table 1. Spearman's correlation coefficients between the pre-match anxiety (U1) and depression after the match (D2), together with the respective p-values. Statistically significant coefficients are highlighted in red.

previous component.

first four principal components. Together they explain 66% of variability in data set of football referees.

U1 X D2	N	R	p-value	partial R	p-value
1. match	26	0,352706	0,077178	0.325715	-
2. match	26	0,275498	0,173130	0.242872	-
3. match	26	0,413806	0,035599	0.398469	-
4. match	26	0,420187	0,032580	0.185825	-
5. match	26	0,395901	0,045276	0.349616	-

Table 2. Spearman's correlation coefficients describing the sequential dependency between the melancholic temperament component and the detected sub-components of criterion of psychological discomfort. Statistically significant coefficients are highlighted in red.

Melancholic component X	N	Spearman coefficients of rank correlation				
		1. match	2. match	3. match	4. match	5. match
O1	26	0,237374	0,231638	<b>0,378974</b>	0,152368	0,228712
N1	26	0,155913	0,219403	0,246548	0,034134	0,213376
D1	26	<b>0,419831</b>	<b>0,388903</b>	0,258407	0,261051	<b>0,404045</b>
U1	26	0,169869	0,083726	0,133873	0,317586	0,083456
S1	26	0,248394	0,348437	0,316233	0,103582	<b>0,597324</b>
O2	26	0,100297	0,015351	<b>0,491095</b>	0,235713	0,156688
N2	26	0,000913	0,073074	0,307430	<b>0,459548</b>	0,222508
D2	26	0,233268	0,177005	0,275001	<b>0,407964</b>	<b>0,365865</b>
U2	26	0,097670	-0,095665	0,328242	<b>0,408111</b>	0,332544
S2	26	0,038256	0,012319	0,308205	0,355762	<b>0,498204</b>

Out of the four principal components interpreted the third component is the one most closely associated with mental status before the match. It captures the unspecified "contribution" of the match to the psychological comfort of the referee (Fig. 4).

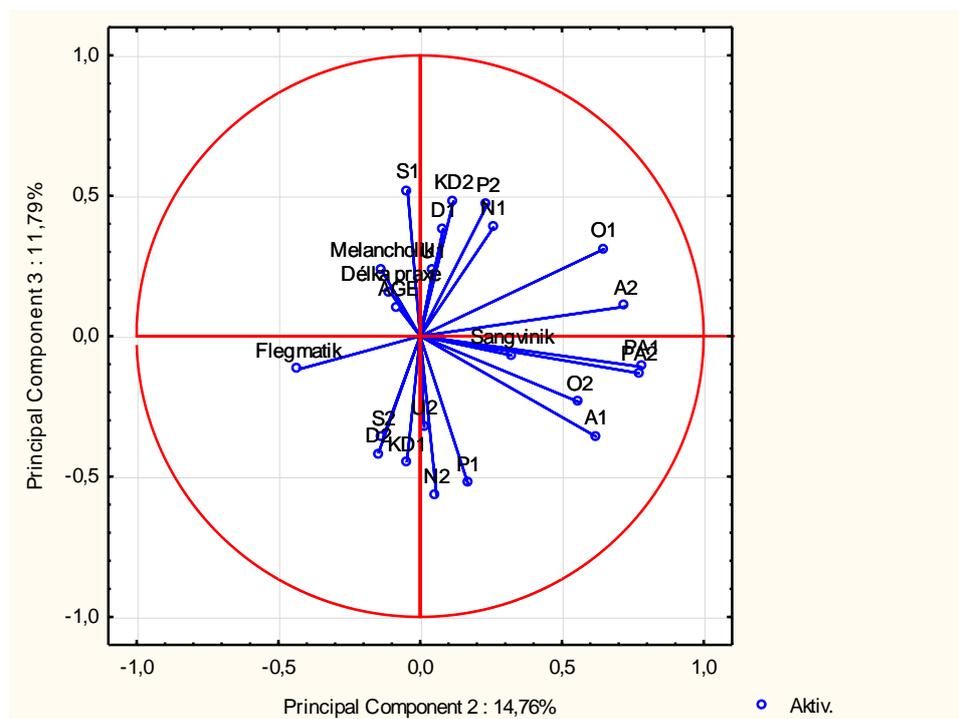


Figure 4. Correlations of original variables with the second and third principal component

The principal component n. 3 could perhaps be called "subjective perception of pre-match situation". It can be

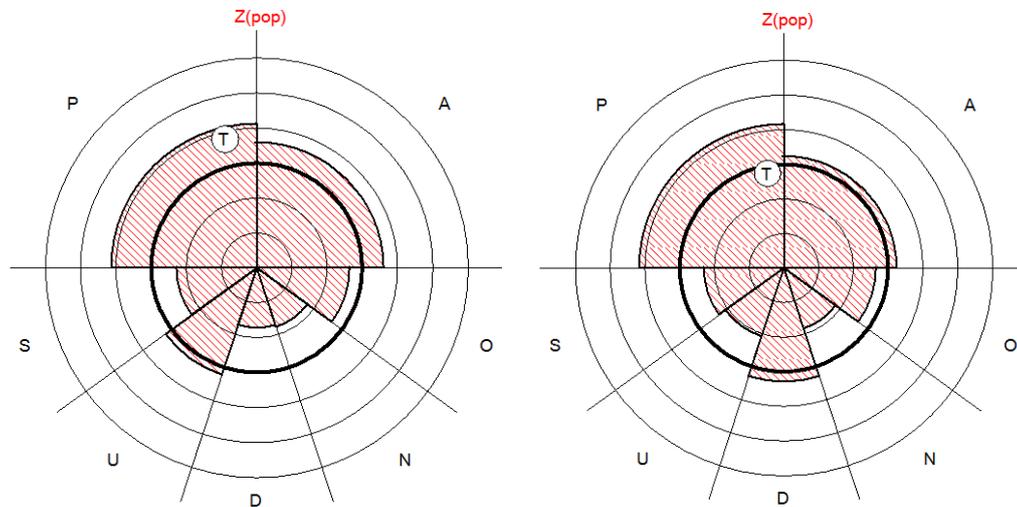


Figure 5. Target graphs showing the average values of the separate components of mental state of men-referees. Situation before the match is on the left, situation after the match is on the right.

**Discuss**, explained either by state of the referee following from anxious anticipation and fear of the match, or possibly by the reflection of current negative experiences related to their personal life (illness, problems at work, in relationships, etc.). These mental states are predominantly of negative characteristics and are associated with a pre-match discomfort (S1, U1, D1, N1, O1,  $0.25 < r < 0.5$ ) and lower level of psychological well-being (P1,  $r = -0.5$ ). However, this pre-match mental state is to some extent connected to a post-match feeling of psychological well-being (P2,  $r = 0.5$ ) and a lower level of component of psychological discomfort (S2, U2, D2, N2, O2,  $-0.2 < r < -0.6$ ).

This trend is also evident from the factual values of individual referees shown in target graphs. We assume that this may be caused by the release of mental tension due to the match. It is possible that the referees consider the match to be an opportunity to relax from the negative experiences ("letting off the steam").

#### *Comparison of mental state of football referees with the general population of the Czech Republic*

We carried out a comparison of mental state of referees before the match and after the match with average values for our population under normal living conditions, described by Mikšík (2004). Psychological state of the referees reference group before and after the match is shifted to the area of psychological comfort in comparison with the general population, which generally means a higher percentage of components of psychological well-being (P) and activity and vigorousness (A), together with a lower

percentage of components of stress (S), anxious expectations and fears (U), depression (D) and impulsiveness (O) in referees.

In target graphs we can see a shift in the scales of separate components of evaluated psychological state of referees (Fig. 5). Situation before the match is on the left, situation after the match is on the right (Fig. 5b). On the axes there are shown standardised values of proportions of each component. The mean and standard deviation of the population of men from the Czech Republic were used for standardisation, as are stated by Mikšík (2004). The highlighted circle represents the population average. The graph shows that the referees have the components of mental state before and after the match shifted to comfort, compared to the general population. Only anxiety before the match is on the level of population mean and then significantly decreases during or after the match. The same applies to the activity. However, the depression is on the low level, before the match and during, or immediately after the match increases significantly up to the average population level.

#### **Conclusions**

During hypothesis validation it was proven that there is a statistically significant dependence between the component of anxious expectations and fears before the match, and the component of depression after the match. Melancholic temperament component significantly correlates with all the sub-components of psychological discomfort. We failed to prove the dependency between the phlegmatic temperament component and the component of psychological well-



being both before and after the match and there was no correlation between the length of the referee's practice and values of components of impulsiveness both before and after the match. The obtained values of subcomponent of current of mental state of football referees were further compared with the measured values of the general population from the Czech Republic.

We found out that football referees have generally lower values of component of psychological discomfort and higher values of psychological comfort compared to common values for the Czech population. The only component of mental state within the criteria of psychological discomfort, of which the average value before the match was lower than in the average population, is the component of anxious expectations and fears. During the match, however, the value of this component decreased significantly. In contrast, as a result of the completed match, the mean value of the component of depression significantly increased, up to the level of the average value of the general population in the Czech Republic. The last component, of which the values were statistically significantly affected by the match, is the component of activity and vigorousness. The average value decreased, but it did not reach the average value for the Czech population.

Within the results of the research we proved that the match affects mental experiences and states of football referees both before and after the match. Before the match we found statistically significantly higher values of the component of components anxious expectations and fears. Like in sportsmen, also in football referees we can observe inadequate pre-start states, particularly the state of excessive activation ("pre-launch fever"). This negative emotional state is reflected both in the physical state (sweating, increased heart rate, etc.) as well as in the psychological state (aggression versus apathy, irritable behaviour, etc.). Regulation of current mental state before the match should lead to optimal activation, which allows the referee to perform optimally according to their abilities.

Specific conditions of a football match and negative expressions of emotions towards the referee are demanding for the referee's personality and his

mental qualities. We would like to point out the need for integration of psychological preparation as an integral part of the overall preparation of each referee for the match. In order to improve the quality of the referee's work during the match and also to contribute to the improvement of their lives, it is recommended to use regulation techniques for removal of negative psychological states of personality. It is always important to recommend and use these techniques individually after consultation with a psychologist.

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## THE TECHNICAL STUDY FOR DIFFERENT GAME POSITIONS IN THE 2nd LEAGUE

FIRIȚEANU VASILE DUMITRU NICOLAE<sup>1</sup>

### Abstract

*Objective.* The purpose of this study was to measure the techniques implemented by players throughout the match, individual, in different positions. It was generally shown that the players are performing during a match all the techniques. All the players have passed and received the ball more often using different techniques of taking possession and passing. However, there are differences due to operating areas of the field. For instance, as the central midfielders' area is the area where the most common actions pass in the game, they perform more technical action items than other players area. In addition, the certain actions were performed more often by those who play in the certain areas. For instance, compared with the players in the other positions, the central midfielders run over the ball, while the defenders have made several defensive actions and the forwarders had more goal situations.

*Methods.* To analyse the performances of eight teams there were used recordings of six matches in the second league. Each team have used the game system settlement 1-4-4-2. The performed frequency by a central defender, a central midfielder with a defensive profile, a central midfielder with an offensive profile and a forwarder from each team were recorded using a manual scoring system.

*Results.* As it was expected, the defenders have made the greatest amount of technical defensive actions. Moreover, the defenders have made more interventions and releases than attacks and blocks. In addition, comparing Fig1 and 8, it is obvious that the central defenders perform the same number of defensive technical actions and passes. However from Fig 1 and 9, it is obvious that the central defenders performed twice as many passes than technical defensive actions. The forwarders have performed the least technical actions than the other players. The central defensive midfielder players performed more defensive technical actions than the offensive midfielders. Comparatively with their total amount of defensive actions: the offensive midfielders received and performed twice as many passes; The central midfielders received and performed five times as many passes; the forwarders received and performed four times as many; replay the sequences.

*Conclusions.* The central defenders performed more head kicks. The central midfielders received, passed and turned the ball over. The offensive midfielders and central defenders performed more interceptions. The lateral defenders performed more throws. The forwarders have more goal attempts. The play position also has caused technical action changes. For instance, the central defenders performed less and lower variety of takeovers.

These differences are due to the field area where the central defender operates. The central defenders must be more cautious and confident in their game because an error often leads to a scored goal by the opposing team.

*Keywords:* analysis, training, football, performance, experiment, tests.

### Introduction

The coach role is to prepare the team for the optimal competitive performance. In the modern football, factors as the increased volume of matches and the need for a rapid adequate recovery after the game, can reduce the time available for the tactical and technical practice. Therefore, the practice time should be used for the maximum players benefit. (Manno, 1992)

The exercise specificity, the simulation and modelling training (e.g. what the players practice in training should comply with the requirement of the game) allows the players to directly experience the situations encountered during the match. (Murau, 2008)

### Method

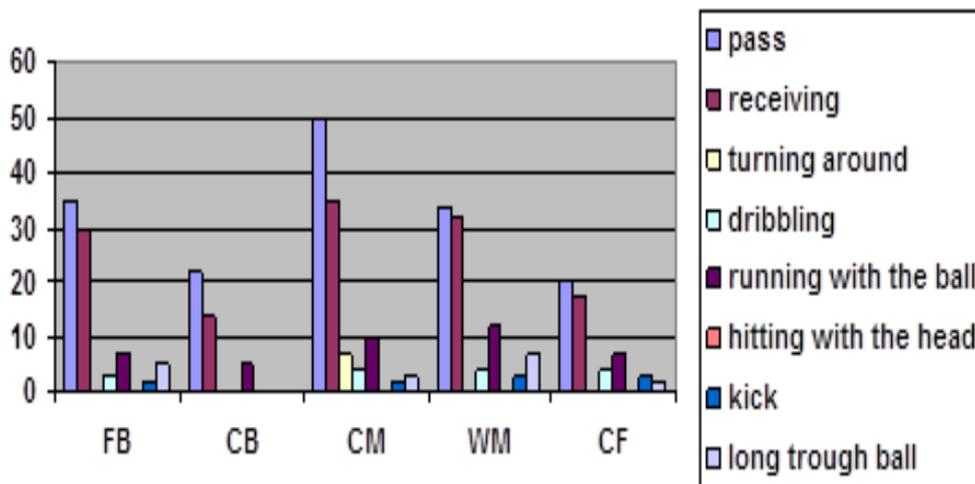
This study search for expanding the research, recording the player's techniques according with the

different functions in different playing positions. To analyse the performances of eight teams there were used recordings of six matches in the second league.

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Victoria Brănești - Sportul Studențesc  
3-2 Saturday 06 March 2010  
Steaua II București - Dinamo II București  
1-0 Sunday 07 March 2010  
Sportul Studențesc - Petrolul Ploiești  
1-1 Saturday 20 March 2010  
Dinamo II București - Gloria Buzău  
0-0 Saturday 20 March 2010

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## Results

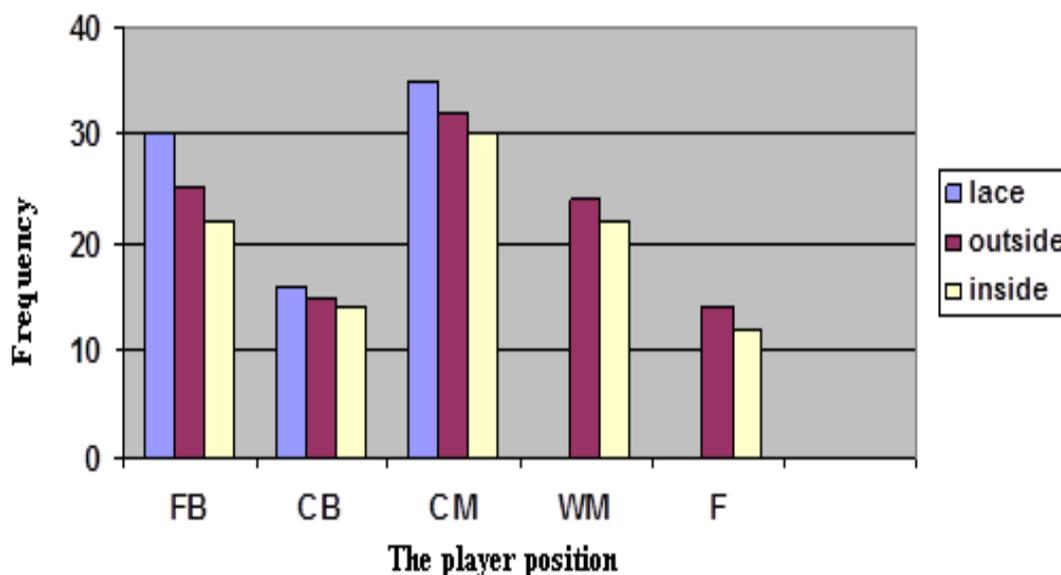


**Figure 1.** The high techniques frequency game for side defenders (FB), central defenders (CB); midfielders (CM), side forwarders (WM) and central forwarders (CF)

Figure 1 shows that when the ball is in the team possession, players have shown more their ability to receive and pass the ball than others tasks all together. Moreover, all players have run with the ball, than they dribbled or changed the game directions.

The central midfielders received the ball and made more passes than other players. As would be expected

comparing with other players in advanced positions, the central defenders were more activ in depth. The midfielders and the forwarders have dribbled more than the defenders, but the central defenders have performed the most strikes.



**Figure 2.** The short best passing game frequency (with foot side)

Figure 2, shows that the players played the majority of passes with foot side.

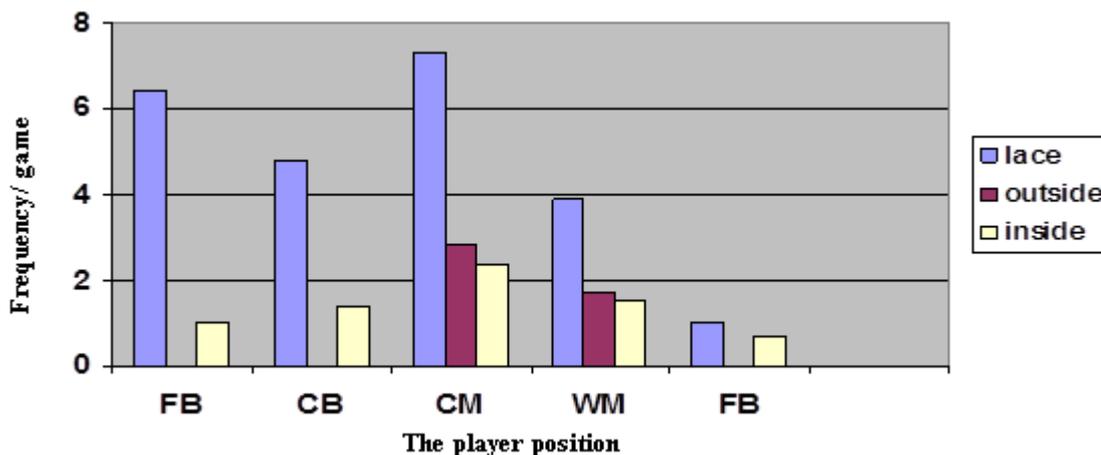


Figure 3. The long performing passes frequency

Figure 3, shows that most long passes were performed using the string (the part that joins the string with the thumb of the foot)

The midfielders and the forwarders used for long passes the inside, the outside part of the foot and the

string. Yet the defenders were not passing with the foot outside.

The offensive players and the forwarders have used a variety of other types of passing, as passing with inside string, more than other players.

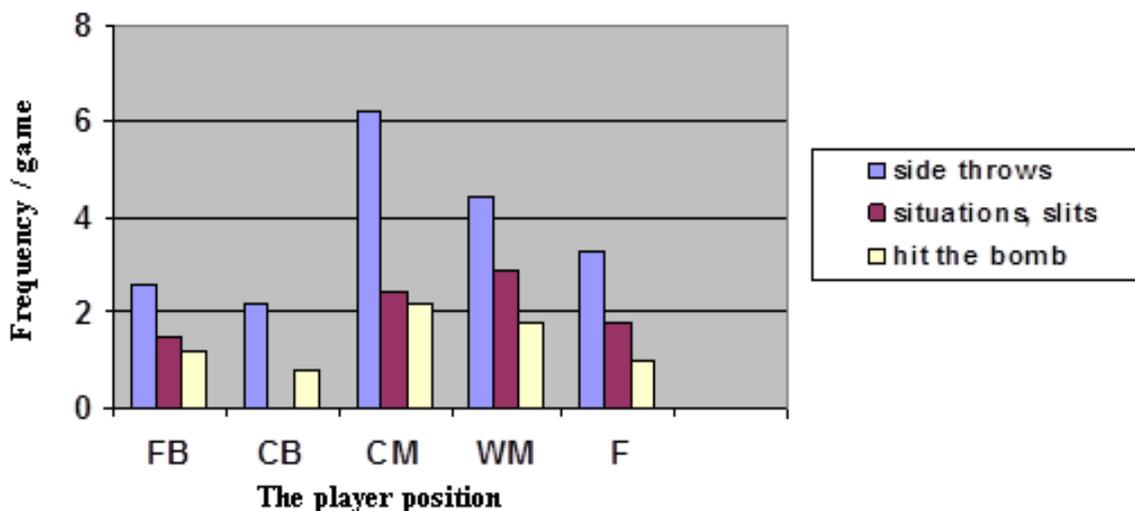


Fig. 4. The other best passes frequency

In addition, the central defenders performed the smallest pass numbers and in the same time the

smallest type of pass variety. Figure 2, 3 and 4 prove that all the players performed much many short passes

than long or other kind of passes.

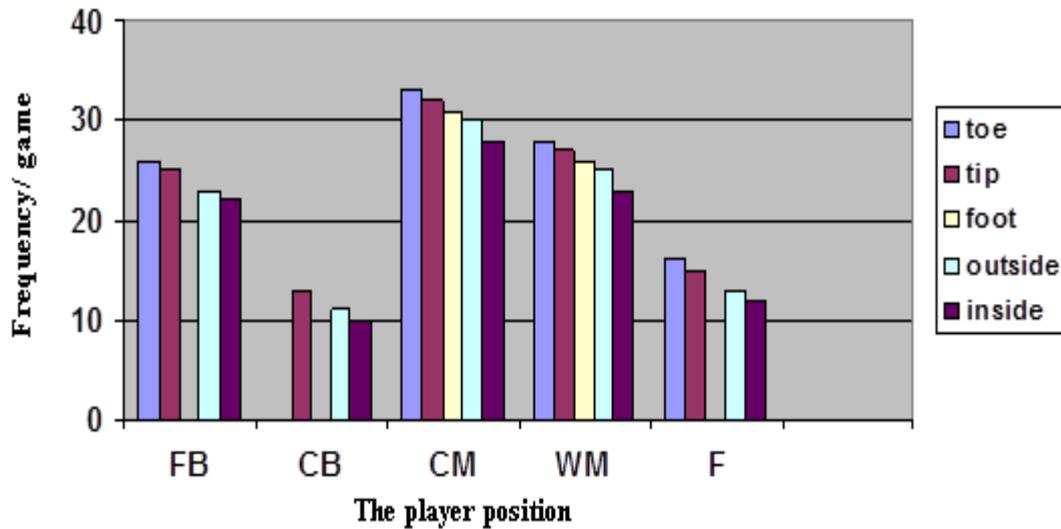


Figure 5. Frequency on game of the foot position

Figure 5 shows the frequency of the foot players position used for catching the ball. All players used the inside part of the foot for taking over the most of the balls.

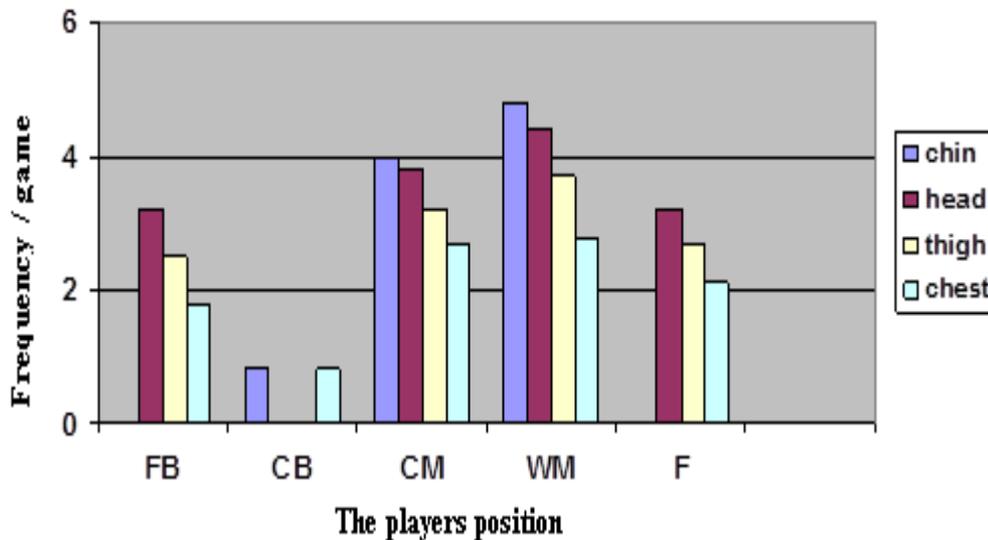


Figure 6. Frequency of use of other body's surfaces

Moreover fig 6 shows that the central midfielders received the ball often and used greater variety of methods and other body parts (chest, thigh, head, and chin) for entry into possession, rather than the other players.

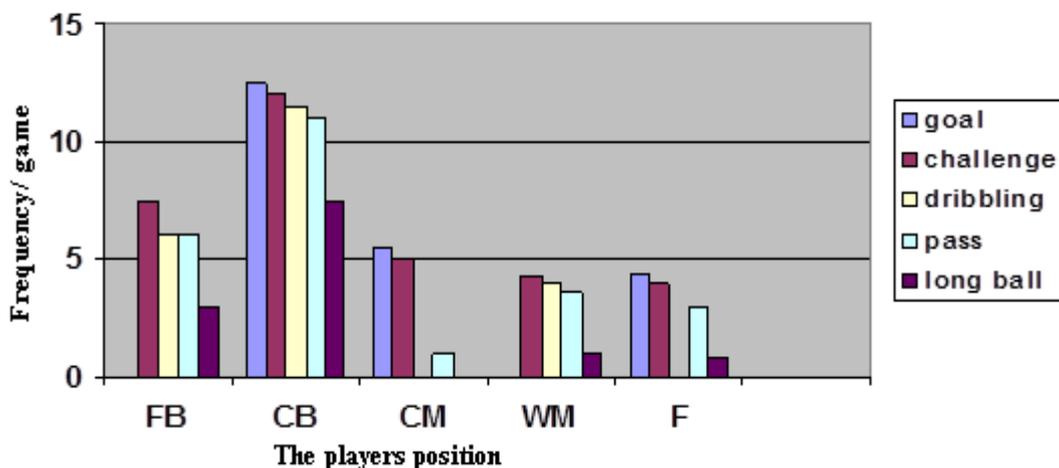


Figure 7. The frequency of the head kick passes

**Discuss**

The central defenders have used their thigh or head, and seldom used their chin, just for retrieving the ball. Fig. 7 shows the various head kicks types performed. The central defenders have cleared the field using more head kicks than other game players. The defenders have performed more head kicks and refusals for clearing the field than other types of head kicks (i.e. deflections, passes, put downs), while the forwarders and midfielders have performed more head passes.

Figure 7 shows that when their team was not in the ball possession, all the players have carried out releases, blockings, interceptions and attacks.

As would be expected the forwarders have performed at goal stages more attempts with heads.

Actions “outsides possession”

Figure 7 shows that when their team was not in the ball possession, all the players have carried out releases, blockings, interceptions and attacks. As would be expected the forwarders have performed at goal stages more attempts with heads. Actions “outsides possession”

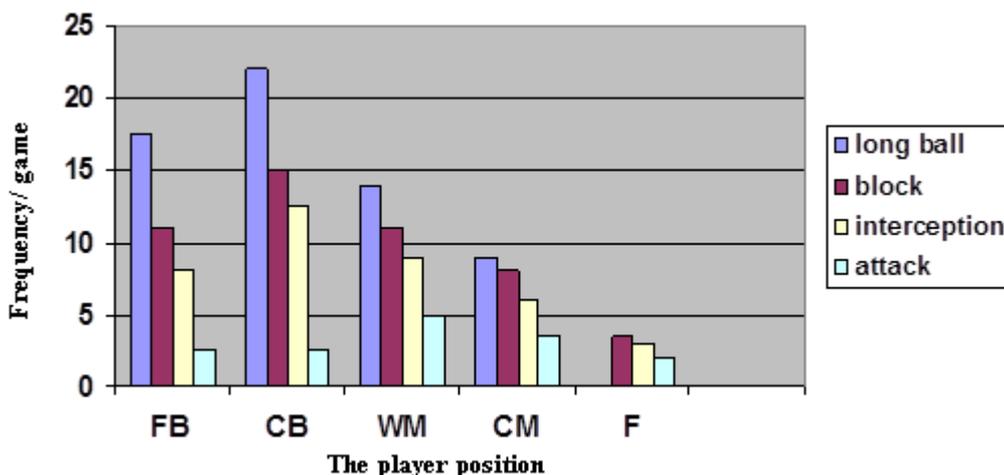


Figure 8. The frequency of the performed defensive actions

As it was expected, the defenders have made the greatest amount of technical defensive actions.

Moreover, the defenders have made more interceptions and releases than attacks and blocks. In addition, comparing Fig1 and 8, it is obvious that the central defenders perform the same number of defensive technical actions and passes.

However from Fig 1 and 9, it is obvious that the central defenders performed twice as many passes than technical defensive actions.

The forwarders have performed the least technical actions than the other players.

The central defensive midfielder players performed more defensive technical actions than the offensive midfielders.

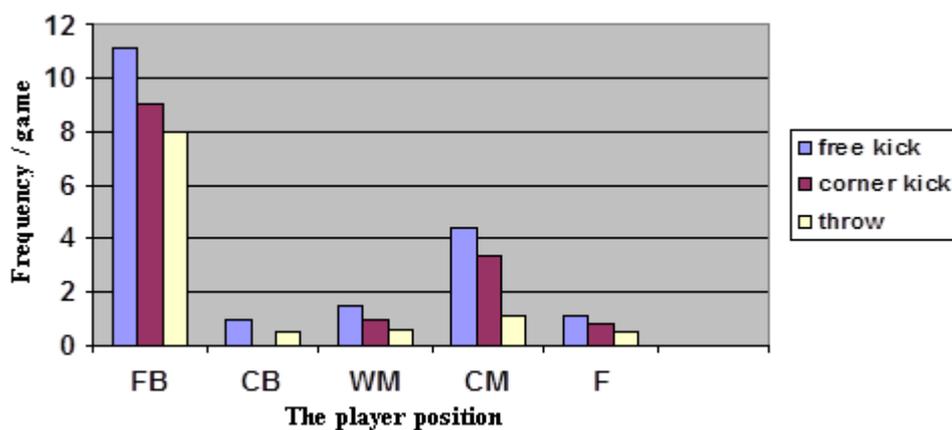


Figure 9. The frequency of the replied sequences

Comparatively with their total amount of defensive actions:

1. The offensive midfielders received and performed twice as many passes
2. The central midfielders received and performed five times as many passes
3. The forwarders received and performed four times as many

Replay the sequences

Figure 9 shows that all players have performed the replay the sequences except the central defenders who did not perform corner kicks and throws.

The side defenders performed more free throws and kicks than other player.

The offensive midfielders and forwarders performed the smallest amount of throws.

The central forwarders performed more corner kicks than other players. The central defenders performed more head kicks.

The central midfielders received, passed and turned the ball over. The offensive midfielders and central defenders performed more interceptions. The lateral defenders performed more throws. The forwarders have more goal attempts. Some

actions have been shown to be less specific for a game position. For instance, the central defenders have dribbled strike the ball and turned less, the central forwarders have passed less, the forwarders performed defensive actions less, while the pressing and the recovery actions have been dominate actions for all players. These data show that a player position and a field often decided the technical actions performed. The play position also has caused technical action changes. For instance, the central defenders performed less and lower variety of takeovers.

Takeovers on other areas, performed less and lower variety of long passes, performed less and lower variety of other kind of passes, performed more releases than other players.

These differences are due to the field area where the central defender operates. (Motroc, 1996)

The central defenders must be more cautious and confident in their game because an error often leads to a scored goal by the opposing team.

On the contrary, the midfielders and the forwarders when they have the ball they take the risk in order to initiate an atac, a dribble or to score a goal. This more



risky approach is seen in the shown result. (Comucci, Viani, 1988)

The midfielders and the forwards have received the ball more times and performed more had passes. However, all players mainly used the inside foot part for short passes and string side for the long passes. Therefore, while the technical changes are partly due to the player position, there are some changes for all positions that are more frequently used. (Rădulescu, Dima, 2009). The amount of the defensive technical actions used by the player are determined by the player's positions. Major roll for any defender is to stop the opposing team attacks. Therefore, the defenders as it is shown in this study are performing the largest amount of the technical defensive actions. (Bompa 2001)

On the contrary the major rol for the forwarders is to created goal situations and to score.

Therefore, the forwarders operate in the areas closer to the opposite team goal area. That compared with other players the forwarders run the smallest part of the defensive technical actions.

Moreover, the results also showed that the defensive central midfielders performed more defensive actions than the offensive midfielders.

The modern offensive midfielders operate all over the field often during the match covering the greatest distance.

On the contrary the central defensive midfielders perform more defensive actions. It was also pointed out that the defenders have performed more interception and releases than attacks and blocks.

## Conclusions

The practice specifics and the need for training as it is shown in this study is present already in the most football clubs, were the coaches are often trained to work specifically with the player, according with everyone's positions: goalkeepers, defenders, midfielders and forwarders.

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