

## TULBURĂRI POSTURALE LA CULTURIȘTII AMATORI

### POSTURAL DISORDERS IN AMATEUR BODYBUILDERS

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#### **Abstract**

Normal posture is an important indicator of the neuromuscular system and skeleton health. Bodybuilding exercises induce on the body a high mechanical stress and a bad posture in the exercise's execution can have several repercussions on the body. The objective of this study was to investigate the type and incidence of postural deficiencies in amateur bodybuilders. This study included 20 male subjects from three Oradea fitness clubs (22,35±2,13 years) who practice amateur bodybuilding. The evaluation included an anthropometric and somatoscopic examination and a questionnaire. The analysis of the questionnaire showed that all the subjects go to the gym with the purpose of enhancing their muscles. Only 30% of them are aware that their posture is not correct, but none of them works for the correction of the posture. The most frequent postural deviations are the kyphotic attitude and forward head (22%). Most subjects have at least two posture deficiencies (35%) and only 10% had a correct posture. The incidence of the postural abnormalities among the bodybuilders is very high, the most frequent ones being the kyphotic attitude. Additional studies would be necessary for a detailed analysis and treatment of the causes of these abnormalities. The practice of bodybuilding must be realised with the observance of the correct lifting techniques under qualified supervision and guidance so that the performers be protected by any likely prejudice that might result from an incorrect execution.

**Key words:** *posture deficiencies, bodybuilders, somatoscopy*

#### **Rezumat**

Postura normală este un indicator important al sănătății aparatului neuro-muscular și al scheletului individului. Exercițiile de culturism supun corpul unui stres mecanic mare, iar nerespectarea unei posturi corecte în execuția exercițiilor poate avea implicații negative asupra corpului. Obiectivul acestui studiu a fost investigarea tipului și incidenței deficiențelor posturale la culturiștii amatori. În studiu au fost incluși 20 de subiecți de gen masculin de la trei săli de fitness din Oradea (22,35±2,13 ani) care practică la nivel amator culturismul. Evaluarea a cuprins examen antropometric și somatoscopic și un chestionar. Din analiza chestionarului a rezultat că toți subiecții merg la sală cu obiectivul de a-și dezvolta

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musculatura. Doar 30% dintre ei sunt conștienți că postura lor nu este corectă dar niciunul dintre aceștia nu lucrează pentru corectarea posturii. Cele mai frecvente deviații posturale sunt atitudinea cifotică și cap aplecat înainte (22%). Cei mai mulți subiecți prezintă cel puțin două deficiențe posturale (35%) și doar 10% au avut o postură corectă. Incidența anomaliilor posturale printre culturști este foarte mare, cea mai frecventă fiind atitudinea cifotică. Studii suplimentare ar fi necesare pentru aprofundarea și tratarea cauzelor acestor anomalii. Practicarea culturismului trebuie realizată cu respectarea tehnicilor corecte de ridicare, sub supraveghere și îndrumare calificată pentru ca practicanții să fie protejați de eventuale prejudicii care pot rezulta dintr-o execuție incorectă.

**Cuvinte cheie:** *deficiență posturală, culturști, somatoscopie*

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## **Introduction**

Bodybuilding consists of the performance of exercises with progressive resistance in order to control and develop the body muscles [1].

The bodybuilding trainees aim to developing a healthy, strong body, with a massive, well-shaped and proportioned musculature.

Today's generation is very preoccupied by the personal aspect, but tends to neglect the problems that can appear in the process of building a beautifully developed body. Most of the gym clients arrive there due to the invitation of the friends, the acquaintances that practice bodybuilding and they are attracted by their shape and muscles. But these shaped muscles can very often hide postural deficiencies of the spine that sooner or later causes pain, increase of the multitude of movement amplitude or other repercussions on the muscular-articular-kinetic system. This usually happens due to the non-standard use of the body.

The bodybuilding exercises subject the body to a high mechanical stress, with the purpose of obtaining its adaptation. Certain parts of the body are more sensitive than others and can lead to various injuries. The most frequent damages are in the area of the lumbar spine, shoulders, knees, elbow [2]. Abadi and Rahnama [3] investigates the type and incidence of the skeleton anomalies at bodybuilders. The examination of 118 subjects showed an average of 7,5 deformations per sportsman. The most common abnormalities were the internally rotated shoulders (10.4%), lordosis (9.61%), forward-projected head (8.65%) and kyphosis (7.78%).

Another risk of bodybuilding is represented by the muscular-tendinous-ligament damages (muscle pulling, tendinitis, sprains). Goertzen and col. [4] showed in their studies the presence of these affections in 83,6% of the investigated subjects.

In order to prevent incidents, next to the adaptation of the weights to the momentarily possibilities and a better execution technique, a high execution is given by the general position of the body. The performance of the bodybuilding exercises from incorrect positions leads to postural deviations and even greater abnormalities of the body.

Normal posture is one of the important components of the physical state reported to health [5]. It is an important indicator of the neuro-muscular apparatus and skeleton health of the individual. Orthostatic posture is the erected, well-balanced posture of an individual [6]. It is a complex adaptive function of the body and it represents a condition sine qua non for the achievement of high level biological and social performances [7]. However, very few studies highlight the relationship between the sports activity and the body posture. When the posture of an

individual is not erect and well balanced, we talk about dysbalancement or posture deficiency. Functional deficiency of the posture is a deviation from the normal body posture, without showing structural modifications. However, the real posture deficiencies are pathological entities with severe modifications of the body morphology and with a little favourable correction prognostic [8].

The objectives of this study were the assessment of the posture and investigation of the type and incidence of the postural deficiencies in amateur bodybuilders.

## **Material and methods**

The study included 20 male subjects from three Oradea gyms aged between 19 and 25 ( $22,35 \pm 2,13$ ) who exercise currently. They were evaluated, performing their anthropometry, somatoscopy and a questionnaire. The anthropometric assessment included the body mass, measured in kilograms, with the help of the electronic weight and height using the height and weight meter. Based on these parameters the body mass index was calculated.

### *Somatoscopic assessment*

The visual exam of the global and segmented alignment of the body was performed from the front, behind and profile, in statics and dynamics).

The position for the assessment was: orthostatism with relaxed shoulders, upper limbs next to the body, forearms in intermediary prono-supination position, fingers slightly bent, horizontal chin, eyes forward, lower limb close to the body, knees extended, feet facing forwards, heels close to one another, tips slightly or more facing away from each other, without exceeding  $45^\circ$ .

The segmented somatoscopy was achieved through the research of the morphological and functional features of the regions, arts and segments of the body, in a methodical way, from up to down in the following order: head, face, neck, trunk, chest, abdomen, upper limbs, back, pelvis and lower limbs.

The exam from behind was performed following whether the median line of the symmetrical anthropometric frame coincided with the body's symmetry axis, passing through: vertex, external occipital protuberance, spinal apophyses of the cervical, thoracic, lumbar, vertebrae, lower fold, between the internal femoral epicondyles, tibial malleolus and projects in the middle of the support basis. The vertical line must be equidistant compared to: the median relief of the heels, legs and thighs, the scapulae and it coincides with the median line of the trunk and head.

We continued with the profile examination verifying whether the zero vertical of the symmetrical anthropometric frame coincided with the body's symmetry axis, passing through: vertex, ear lobe, shoulder joint, the great trochanter of the femur, slightly forward compared to the knees medial, slightly forwards compared to the lateral malleolus, at the level of the cutaneous projection of the interline of the median-tarsial joint – Chopart.

We continued with the frontal examination verifying whether the vertical of the symmetrical line of the body coincides with the zero vertical of the anthropometric symmetry, passing through: the middle of the forehead, middle of the nose, middle of the lips, middle of the chin, sternum, umbilicus, pubic symphysis, through the internal femoral condyle and tibia malleolus and projects in the middle of the support basis.

Dynamic somatoscopy was performed by corrective and hypercorrective exercises.

### *Questionnaire*

Each subject was applied a non-standardised questionnaire, including 11 items with questions that reflect the level of acknowledgement of the performing the exercises, the purpose for which they attend gyms and whether they are aware of the deficiencies that they present.

*Statistical analysis*

The data were processed using the statistic program SPSS20 for Windows and were presented descriptive with the average, standard deviation and frequency of the responses from the questionnaire. The Pearson correlation test was used in order to verify any likely correlation between the studied variables, considered significant at  $p < 0,05$ .

**Results and discussions**

Table n° 1 shows the general features of the studied group. From the point of view of the body mass, all the subjects fit within the medium weight category. They all practice amateur bodybuilding, the most recent training started 5 months ago and the oldest training started 16 months ago.

Table 1. General features of the studied group.

	Age (years)	BMI (kg/cm2)	N° months of practice
Arithmetic mean	22,35	22,86	10,95
Standard deviation	2,134	1,158	3,471
min	19	20,13	5
max	25	24,26	16

In table n° 2 we can see that all the subject go to the gym with the objective to build muscles at any cost. Most of them go to the gym 3-4 times a week (70%). Only 30% of them are aware that their posture is not correct, but none of them works for the correction of the posture. The concern is that although they are aware that they perform most exercises incorrectly, but there are no trainers or they do not turn to them to correct and explain their advantages and flaws.

After practice, 50% have back pain and 20% have lower limb pain.

In what regards the self-assessment of the posture 45% are satisfied with their posture which indicated an overrated self-image or lack of knowledge in what represents a correct posture.

Table 2. The results of the questionnaire applied.

Questions	n	%
1. How long have you been practicing bodybuilding?		
a) one month	1	5
b) one year	12	60
c) more than one year	7	35
2. What is the purpose of practicing bodybuilding?		
a) Correction of the posture	0	0
b) Muscular hypertrophy	20	100
c) As a sport	0	0
3. How many times a week do you practice bodybuilding?		
a) once a week	0	0
b) twice a week	6	30
b) three times a week	7	35
b) four times a week	7	35
4. Who taught you to work out in gyms?		
a) A friend	10	50
b) A trainer	4	20

c) Nobody	6	30
5. Are you aware that you have a certain deficiency?		
a) Yes	6	30
b) No	14	70
6. If yes, do you have a certain program for the correction of the deficiency?		
a) Yes	0	0
b) No	4	20
c) No, but I intend to make one	2	10
7. How do you feel after practice, from the physical point of view?		
a) good	6	30
b) I have back pain	10	50
c) I have pain on lower limbs	4	20
8. Do you work for a certain muscle group or for more?		
a) One muscle group	0	0
b) More muscle groups	20	100
9. In the daily activity, in the days when you do not exercise, do you have spine or lower limb pain?		
a) Sometimes	15	75
b) Always	3	15
c) Never	2	10
10. Do you take any treatment for the pain?		
a) Physiotherapy	0	0
b) Medicines	4	20
c) Both	0	0
11. Are you satisfied with your current posture?		
a) Yes	9	45
b) No	6	30
c) Indifferent	5	25

Graph n° 1 presents the incidence of the postural deviations on the studied group. The most frequent postural deviations are the kyphosis attitude and the head bent forward (22%), followed by lordotic attitude (19%).

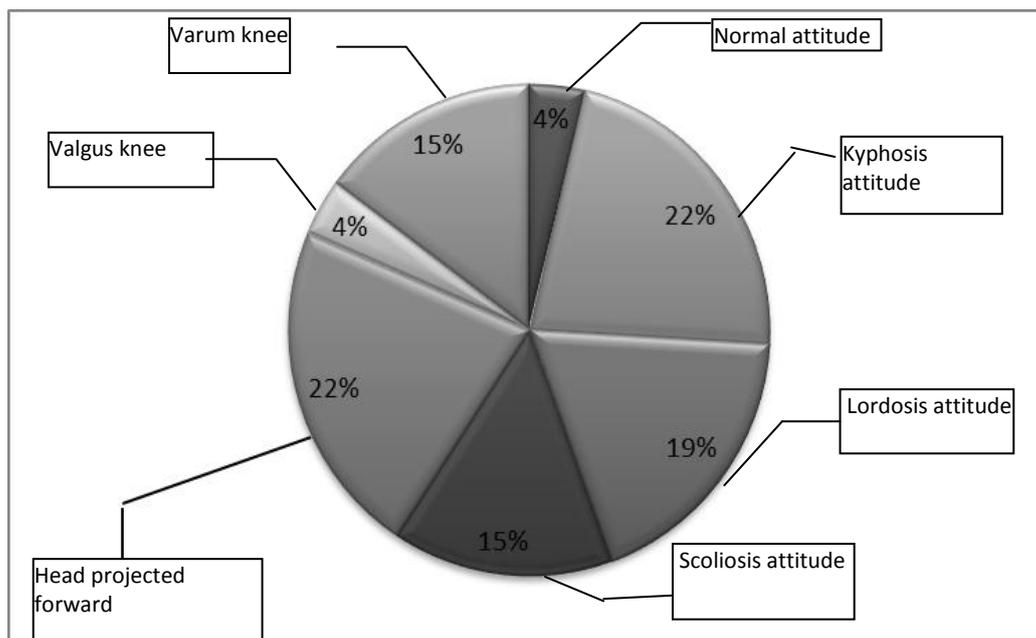


Figure 1. The incidence of the postural deviation.

Most subjects have at least two posture deficiencies (35%) and only 25% had four posture deficiencies. Out of 20 subjects assessed, two have a normal, correct posture (table n° 2).

Table 2. Number of postural deficiencies per subject.

Number of deficiencies	Number of subjects	%
4	5	25
3	6	30
2	7	35
0	2	10
Total	20	100

The Pearson test showed a positive and significant correlation from the statistic point of view between the number of practice number and number of present deficiencies at each subject ( $r=0,55$  and  $p=0,003$ ).

From the total number of subjects, 60% presented a kyphotic attitude and only 10% had a correct posture. The position of the cervical spine at 40% from the subjects was classified as „*Head projected forward*”. In the study of Neto Junior and col. [9], 53% from the analysed subjects had cervical lordosis. The lordotic attitude was found in 50% from the subjects and the scoliosis one in 40%.

The somatoscopy within the level of the lower limbs showed the fact that 60% from the subjects had varum knees and 10% presented valgus knee.

Table 3. The prevalence of the postural deviations in the study group.

Posture deficiency	%
Normal attitude	10
Kyphosis attitude	60
Lordosis attitude	50
Scoliosis attitude	40
Knee in varum	60
Knee in valgus	10
Head projected forward	40

## Conclusions

The conclusions that can be drawn from this paper are that there is a higher incidence of the posture deficiencies at the amateur bodybuilder, the most frequent one being the kyphosis position.

The results of this study are according to the results of other research [3] and they can lead to the conclusion that the incidence of the anomalies among the bodybuilders is very high. Additional studies would be necessary for a detailed analysis and treatment of the causes of these anomalies. These results should represent a warning for these sportsmen. The trainers from the gyms should aim, except from the muscular hypertrophy, also the prevention and reduction of the anomalies of the sportsmen through the projection of a muscular program proper to these objectives. The extended performance of motor acts specific to the sports activity, repeated traumas, incomplete repair or retrieve of them can lead to unwanted collateral effects of the sports practice.

The existence of these effects has been recognised lately by several authors [10] and as a consequence, they promote another objective of the performance sports: the prevention or compensation of the physical deficiencies due to specific physical strain.

The practice of bodybuilding should be supervised by trained, well informed people, who can train sportsmen in the correct lifting techniques and protect them from a damage which can result from an incorrect execution.

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