

**MINISTRY OF EDUCATION
NATIONAL UNIVERSITY OF PHYSICAL EDUCATION AND SPORT
FACULTY OF PHYSICALEDUCATION AND SPORT IN BUCHAREST
DOCTORAL SCHOOL**



**PERSONALITY FACTORS DETERMINING THE
EFFICIENCY OF BODYBUILDING AND FITNESS
TRAINING**

**SUMMARY
THESIS**

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**BUCHAREST
2024**

Abstract

Key words: personality factors, psychological dimensions, bodybuilding and fitness, muscle relief, body fat

Introduction

In accordance with Juvenal's dictum "MENS SANA IN CORPORE SANO" if the human body functions in optimal parameters all functions are at the same level, therefore the concern for maintaining an optimal state of health expressed through the physical appearance is a condition of modern fitness. If fitness outlines the physique, bodybuilding brings it out and the psyche through motivation, perseverance, self-improvement, attitude enhances it.

The increase in strength invariably leads to an increase in muscle mass, which is maximized in bodybuilding and fitness training, giving athletes and trainers the opportunity to create a work of art from their own bodies while inoculating the ideal of beauty, strength, power and health of the aspects physical and mental.

Practicing bodybuilding and fitness requires the organization of life by adopting a healthy lifestyle due to training routines, nutrition (hyperprotein to promote muscle mass growth, hypoglycemic to reduce adiposity) and rest, the state of physical fatigue and mental stress negatively affecting the parameters effort and level of muscle strength.

Knowing the personality of athletes in order to establish the personality factors determining the effectiveness of bodybuilding and fitness training is a necessity in order to improve sports performance by using psychological strategies and techniques that lead to the development of specific mental skills.

Content: The thesis is structured in two parts, respectively Part I which includes the theoretical foundation of the work and Part II which contains the premises of the research to establish the research directions, concretized in the first study of the ascertaining type and of the effective intervention by carrying out the second study of experimental type. Contains 10 chapters and separate volume of appendices.

Part I of the thesis

It contains 3 chapters that contain the most important theoretical and practical information regarding the personality structure, personality factors and characteristics of athletes who practice bodybuilding and fitness, synthesized by notions related to the Big five model, personality questionnaires and efficiency indicators bodybuilding and fitness training.

Bodybuilding competitions are becoming increasingly popular and competitors are judged on their aesthetic appearance and typically exhibit high levels of muscularity and symmetry and low levels of body fat (Robinson, Lambeth-Mansell, Gilibrand, Smith-Ryan, & Bannock, 2015). Maximizing skeletal muscle hypertrophy requires appropriate training strategies, the authors believe (Alves, et al., 2020), concluding that there is a training model that separates training into four distinct periods known as the offseason, pre-competition, peak week before competition and post-competitive, each period containing a specific dosage spectrum, regarding intensity, volume, type of basal (multiple joints) or segmental (single joint) exercise, athletes performing training with higher intensity loads, lower number of repetitions and longer rest periods in the off-season than before competition.

Other researchers have initiated studies related to the perspectives of self-determination theory, the authors (de Liz, Viana, Dominski, & Andrade, 2018) investigating the reasons for practice and the motivational regulations of athletes who perform weight training, highlighting that men and women are self-determined in the practice of training with weights, and weight loss was positively associated with introjected regulation and increased muscle mass in the case of female practitioners, and in men with the health and well-being motive. The motives “health and wellness” and “leisure and socialization” were related to each other and to identified regulation, intrinsic motivation, and the self-determination index.

The conclusions of the first part of the thesis are as follows:

Extraversion and narcissism may be underlying factors in exercise addiction with no effect on agreeableness, Exercise engagement and intensity are also related to exercise addiction (Cook et al. 2020).

Athletes who experienced the greatest success in their sport (Steca, Baretta, Greco, D'Addario, & Monzani, 2018) scored higher than non-athletes on every Big Five personality dimension except openness, in while less successful athletes scored higher than non-athletes only in extraversion and agreeableness. More successful athletes showed more agreeableness, conscientiousness, and emotional stability than less successful athletes. Individual athletes were found to be more energetic and outgoing than team athletes

The dimensions of openness to experience, emotional stability, extraversion, and conscientiousness have been reported to be positively related to performance (Huminska-Lisowska, et al., 2022).

Athletes with certain personality traits were more susceptible to competitive anxiety and neuroticism could serve as a predictor of competitive anxiety in all team athletes (Kemarat, Theanthong, Yeemin, & Suwankan, 2022).

The consumption of high-protein diets by people who frequent physical exercise rooms is increasing with the premise of favoring the scenario of muscle hypertrophy and decreasing body fat (Zanetti, Parentti, Pina, & Franco, 2018)

Muscles will not grow if all the factors favoring muscle hypertrophy are not addressed. The most significant aspect of weight training is the analytical processing of each muscle group, which leads to the growth and development of muscle mass simultaneously with the reduction of the adipose layer in order to obtain muscle relief with visible striations.

The dynamics of the evolution of adipose tissue faithfully reflects the degree of sports training (Urichianu-Toma, Timnea, & Cheran, 2010), in performance athletes, the value of adipose tissue changes in direct proportion to the amount of physical effort performed, with the training period, health status, biological age.

Knowing the personality of athletes is a necessity in order to identify and establish the personality factors determining the effectiveness of bodybuilding and fitness training.

Part a - II - Contains 7 chapters in which the systematic activity initiated and carried out in two studies, one of ascertaining type and one of experimental type, can be found

Research Background: Aspects of motivation and weight training routine of bodybuilding and fitness practitioners

In order to outline the entire research and objectify the observations of over 20 years of training and participation in competitions, we designed an opinion questionnaire with questions specific to weight training in order to perform an informative analysis based on the aspects declared by the participants. The suggestively named questionnaire "I work out at the gym" contained 10 questions (anamnesic and knowledge data) with free answers, 5 general questions and 30 questions with 5 predetermined answer methods, for prospecting the choice of the representative sample as well as appeal or control.

Purpose: Investigating aspects related to the level of motivation expressed through the prism of emotions and feelings felt at the gym, as an effect of training, lifestyle, acquisition of basic theoretical and practical knowledge and training routines.

Objectives: Knowledge of the level of education, needs, requirements, expectations, behavior in the gym, emotions, motivation for choosing this sport and/or participating in competitions,

training methods used in practice, exercise dosage and last but not least of identifying relationships between felt emotions-motivation-initial or final goal.

Research Questions:

- ✓ Going to the gym, needing exercise or a healthy lifestyle?
- ✓ Does routine weight training increase motivation to practice bodybuilding and fitness?
- ✓ Do competitive or non-competitive weight training athletes have similar training routines and are motivated by different emotions or feelings depending on the intended goal?

Period and place of research

The research was carried out in 2021, during 3 months (February-April) in which the activity was carried out systematically every week, the questionnaire being processed in Google forms, distributed through online means, to the sample chosen from bodybuilding and fitness practitioners from Bucharest and from the country, the data being collected automatically. The form was distributed to 120 practitioners, completed and submitted by 69 practitioners, 9 responses were invalid because they had more than 9 questions unanswered, which is why they were cancelled. 60 subjects between the ages of 17 and 59 actually participated in the research, the questionnaire being completed by a number of 40 athletes who subscribed to the gym but were not competitive and 20 athletes registered with a sports club participating in national or international competitions according to the competitive calendar of the Romanian Bodybuilding and Fitness Federation.

Partial conclusions PART II - Premises of the research

The muscle sense was perceived by all respondents regardless of experience, similar to the sense of the ice in skating, the racket in tennis, the ball in soccer players, the basket in basketball, as well as in other sports.

Muscle soreness was recognized by most participants as an important effect of training effectiveness.

The dosage of training differs in terms of volume and intensity in competitive versus non-competitive depending on the goal pursued and the motivation of each one.

Choosing a healthy lifestyle and/or achieving the desired physical/athletic shape are the aspects of the weight training routine that motivate the exercisers the most;

The motivation through the prism of the emotions experienced or the goals pursued is reflected in the weight training routine of all respondents, they acquire the specific notions of

an effective training according to the proposed goals, obviously the motivation and the level of training are at high levels in the case of performance athletes.

Part II, the first study of the ascertainment type regarding the identification of personality factors determining the performance in bodybuilding and fitness

Purpose: Complex assessment of the personality of athletes practicing bodybuilding and fitness and knowledge of the determining personality factors of athletes practicing bodybuilding and fitness, as well as their influence on sports performance;

Objectives: Knowledge of the level of development of personal autonomy of athletes, of the 5 superfactors of personality and certain personality traits, emphasizing temperamental characteristics, relevant psychological traits and the presence of symptoms for the development and maintenance of eating disorders, knowledge of personality, as an indicator of the overall mental structure of athletes, knowing the values of functional parameters and arm strength, knowing certain percentages of body composition and identifying relevant personality factors in determining performance in bodybuilding and fitness

Hypotheses of the study:

- ✓ There are personality factors that determine the effectiveness of bodybuilding and fitness training;
 - ✓ Most athletes have a medium and high level of development of the investigated psychological dimensions;
 - ✓ Most athletes are not at risk of eating disorder or general psychological maladjustment;
 - ✓ There is inter-conditioning between the investigated psychological dimensions and the measured biomotor performance indicators in bodybuilding;
- Metode de cercetare** pentru ambele studii: metoda convorbirii, metoda măsurării, metoda observației, metoda statistică, metoda integro-corelativă.

Period and place of research: The confirmatory study was carried out with the participation of 30 athletes practicing bodybuilding and fitness, of which 9 women and 21 men, aged between 18 and 53, who train regularly in different bodybuilding and fitness gyms in Bucharest and from the country, in order to participate in competitions. The athletes were in different stages of preparation, in order to capture from all sides the variations of the scores on the investigated psychological scales and the results of the biomotor measurements performed.

In order to capture as many aspects as possible of the effects of bodybuilding training (Sun & Wang, 2022), namely the harmony of body development, health status and segmental

strength, we performed anthropometric measurements (height, weight, indirectly BMI), biological measurements (pulse, oxygen saturation 2), of body composition expressed in percentages (body and visceral fat) and arm strength measured with a hand dynamometer. Expressed in kg. The biomotor measurements were performed using the apparatus described briefly below, the measurement standards being presented in the instructions for use or the user manual of each apparatus.

From the specific personality assessment tests, 3 tests were applied (Albu Monica, 2009), (COGNITROM, 2021, updated Copyright © 2023), respectively:

1) Personal Autonomy (PA) which evaluates a person's ability to control his own life and the feeling of the possibility of exercising this control;

2) The 5-Factor Personality Questionnaire (CP5F) that assesses Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Autonomy;

3) The Zuckerman-Kuhlman Personality Questionnaire ZKPQ (factors of the 5-factor alternative model) which emphasizes temperamental characteristics.

4) The Eating Disorder Inventory EDI-III, which is an instrument to assess psychological traits and symptoms clinically relevant to the development and maintenance of eating disorders that contains clinical scales and psychological scales to assess other personality dimensions not investigated by the other personality questionnaires established for application in the study.

Partial conclusions of study I of the ascertainment type

The investigated model of variables resulting from the analysis of the psychological and biomotor data was statistically strong, and the Cronbach Alpha Analysis showed that the scales composing the three personality tests and the biomotor data were appropriate for our study. The model resulting from tests and biomotor data was consistent and suitable, a fact demonstrated by the R-Square and Chi-square values, where the estimated value of our model 495 is higher than the saturated, minimum acceptable value of the model 480;

The direct factors involved in the effectiveness of bodybuilding and fitness training (muscle mass, body fat, body harmony, muscle strength) tend to increase (muscle mass, strength, BMI) and decrease (body fat) as the number of athletes increases;

The average values of anthropometric, physiological and motor measurements in both females and males fell within the internationally accepted or recognized limits;

The value of the Cronbach alpha index (0.71) greater than 0.7 demonstrates that the analyzed variables respectively age, height, oxygen saturation, body fat, visceral fat, right

dynamometry, left dynamometry) correlate, each of them, with the additive result of all items (global score).

Part A-II-A - Experimental study II regarding the development of personality factors determining the effectiveness of bodybuilding and fitness training

Purpose: Development and application of an intervention program through psychological and physical means in order to develop the personality factors determining the effectiveness of bodybuilding and fitness training.

The objectives of the study: The complex evaluation of the personality of the research participants, the generation of psychological evaluation reports for each athlete, the development of the program aimed at the development of personality factors determining the effectiveness of bodybuilding and fitness training, the identification of significant or specific differences between the variables evaluated at the initial and final testing of study groups;

- ✓ Appreciation of the dynamics of personality factors after the intervention through psychological and physical means;
- ✓ Appreciation of the dynamics of the measured percentages of body composition and biomotor indicators.

❖ Research hypothesis

The complex intervention through a system of action through mental and physical means specific to bodybuilding and fitness (motivational strategies, psychosomatic relaxation techniques, mental training, training complexity) has broad effects at the physical-motor level and the personality of performance athletes (personal autonomy, self-esteem, perfectionism, impulsive sensation seeking general psychological adaptation, eating behavior, impulsive sensation seeking, sociability, Neuroticism-anxiety, Aggressiveness-hostility, Activity)

The content of the intervention plan developed for the development of the personality factors determining the effectiveness of bodybuilding and fitness training through means specific to bodybuilding and fitness and psychological means.

- Training program: the period of strength, hypertrophy and muscle definition with the implementation of complex and varied training methods and techniques that maximize the physical and mental potential of athletes (Tudor & Crişan, 2007);
- Practicing and repeating in conditions similar to the competition the mandatory positions and the competition program;
- Life style organization: compliance with the training program and training requirements, balanced and specific diet for training periods, recovery period and

sufficient rest, support of efforts by administration under the approved control of effort supporters, (Suffolk, Dovey, Goodwin, & Meyer, 2015).

- Psychosomatic relaxation techniques: Progressive muscle relaxation (RMP) - Jacobson technique and Schultz autogenic training, mental training;
- Motivational support: motivational messages, recordings of one's own developments, inspirational films and thematic documentaries, suggestive posters/images (Gonzalez-Hernandez, Cuevas-Campos, Tovar-Galvez, & Melguizo-Rodriguez, 2020);

The total training method was applied, which includes all the known methods, based on the method of repetitions until refusal, specific to bodybuilding and fitness, for the recruitment of as many muscle fibers as possible in the effort, the stimulation of the growth and development of the muscle mass, as well as the increase of the athlete's ability to adapt and adjust to workloads through training and competition.

The duration of each period was 8 weeks, the athletes following a training program that included 4 trainings per week, adapted to the specifics and objectives of the period;

Each stage of the research was permanently monitored and at the beginning and at the end of the research, measurements of the monitored parameters were carried out. The results were recorded, processed and statistically interpreted.

The initial testing part where the psychological tests were applied and the anthropometric and motor measurements were performed.

The period of application of the intervention program in which the athletes of the experimental group followed the proposed training programs.

The final testing part that provided the final research data to validate the research hypotheses. Sportivii grupului de control au efectuat antrenamentul obișnuit.

The period, place and subjects of the research

The study was carried out between March 2022 and August 2022 both during the weekly training program at the gym and during the National Bodybuilding and Fitness Championship organized between 01.09.2022 and 04.09.2022 in Sibiu.

30 competitive athletes aged between 18-63 participated in the study (small juniors between 18-21 years old, large juniors 21-23 years old, seniors, female master (over 35 years old), male master (over 40 years old), of which 10 athletes and 20 athletes, 15 athletes each for each study, control and experimental group. The distribution of athletes by sports age categories, carried out according to the number of athletes participating in the competitions, for each study group

was the following: 4 sportsmen and one sportswoman participated in the study for juniors, 4 sportsmen and 2 sportswomen for seniors and 2 sportsmen and 2 sportswomen for masters.

Partial conclusions, II-experimental study

There were no statistically significant differences between the two groups at baseline.

There were statistically significant differences at the level of the study groups between the initial assessment and the final assessment for all psychological tests applied in the study, and between the initial and final assessment, compared to the averages of the two groups, there were differences with a lower degree of significance that cannot be extrapolated to the entire population.

The difference between the averages of the final evaluations calculated following the application of the Personal Autonomy questionnaire to the control group was statistically significantly different from the average of the final evaluation of the experimental group. The rated scores of the personal autonomy scales registered increases, so that the group level, the average reached the limit of 60, considered as a transition point to a high degree of autonomy, personal autonomy being the most important factor in the effectiveness of bodybuilding and fitness training .

All the averages of the personal autonomy questionnaire at the final evaluation of the experimental group increased compared to the initial evaluation, thus the overall average of the evaluated athletes reached the threshold of 60, the upper limit of the average level of personal autonomy development, which tends to a high degree of autonomy. The value autonomy average exceeded the threshold of 60, which means that athletes have a high level of this dimension. These values reflect the determination of the athletes, namely the fact that they act according to their own decisions, without taking into account the opinions of others, and do not abandon the execution of a task if they encounter difficulties, striving to cope on their own, an aspect that denotes a characteristic of athletes who practice individual sports , such as bodybuilding and fitness. Following the results obtained, personal autonomy is the psychological factor that most defines and determines athletes who practice bodybuilding and fitness in the sports path towards performance or maintenance.

Statistically significant differences resulted between the initial and final assessment of the study groups and for the CP5F Questionnaire. The rated scores of the CP5F questionnaire scales, respectively conscientiousness, emotional stability and autonomy, registered increases, these being important dimensions of the psyche of athletes who practice bodybuilding. The aggression scale registered a slight decrease compared to the initial assessment, an aspect due to the application of Schultz autogenic training and Jacobson progressive relaxation.

Significant differences with a very high degree of significance also resulted between the averages of the final evaluations of the two study groups for the anthropometric data, the difference being given by the average weight at the final evaluation at the level of the experimental group.

General conclusions:

The mean scores of the psychological dimensions investigated as a result of the application of the intervention plan through psychological and physical means increased for the psychological scales, autonomy, emotional stability, conscientiousness, extraversion, decreased for neuroticism and sociability, and the biomotor values recorded increases and decreases in positive sense, all these important aspects of personality and physical and mental health being necessary in psychological training as a process to optimize the effectiveness of bodybuilding and fitness training.

The dynamics of the psychological dimensions, presented in descending order from the best represented to the one whose influence is less on the psyche of the athletes of the experimental group after the application of the intervention plan, compared to the average rated score of the 15 athletes, is: Valuable Autonomy (AP Questionnaire), Personal Autonomy (AP Questionnaire), Behavioral Autonomy (AP Questionnaire), Cognitive Autonomy (AP Questionnaire), Conscientiousness and Emotional Stability same score (CP5F Questionnaire), Emotional Autonomy (AP Questionnaire), Autonomy (CP5F Questionnaire), Extraversion (CP5F Questionnaire), Agreeableness (CP5F Questionnaire), Activity (ZKPQ Questionnaire), Neuroticism (ZKPQ Questionnaire), Impulsive Sensation Seeking (ZKPQ Questionnaire), Sociability (ZKPQ Questionnaire).

The average values of the anthropometric, physiological and motor measurements in both females and males fell within the internationally accepted or recognized limits, with a tendency towards the lower limit of body fat percentage, respectively towards the upper limit of BMI, and muscle strength at the level of the arms was framed at the strong level.

Athletes who practice bodybuilding and fitness are autonomous, conscientious, emotionally stable, kind and sociable, without being adventurous, very little aggressive and anxious, but tend to seek virtue by pursuing spiritual ideals, such as self-discipline, self-denial, self-restraint, self-sacrifice. These connotations could be related to obtaining the sports form, where the body display in competitions in order to appreciate the proportions, symmetry, musculature and muscle tone with a minimum of subcutaneous fat, must present an ideal, perfect body, with an aesthetic conforming to the norms of participation, aspects that can lead to an exaggerated control over the physical and mental for sports purposes.

The female athletes of the experimental group obtained slightly lower average values of self-esteem than the male athletes, but they are better emotionally balanced and show a greater psychological adaptation than them. According to the results, the athletes of the experimental group have a greater fear of maturity than the female athletes, but show a tendency towards exaggerated control, perfectionism and asceticism greater than them.

Recommendations for specialists in the field:

The implementation of motivational strategies, mental training, certain relaxation techniques in training plans practiced individually or in groups for the development of the relevant personality factors of athletes who practice bodybuilding and fitness is a necessity in performance sports where the evaluation criteria are aesthetic and the psyche it must reflect as strongly and harmoniously as the physical.

Elements of novelty, originality and dissemination of results

The complex evaluation of athletes from a mental, physical and motor point of view is an innovative element in order to create an overall picture of the profile of athletes practicing bodybuilding and fitness.

Building an overview of the physical appearance and personality of bodybuilding and fitness athletes.

The results of the research were capitalized through participation in national and international congresses and scientific sessions in the field of psychology, sport and improving physical condition.

This doctoral thesis was developed under the auspices of the National University of Physical Education and Sport Bucharest , in the Doctoral School Department based on the scientific research project approach by the Doctoral School Council.