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**DOCTORAL SCHOOL OF CHEMISTRY, EARTH AND LIFE SCIENCES**  
**RESEARCH AREA: GEOGRAPHY**



# **IMPACT OF GEODEMOGRAPHICAL STRUCTURES ON GENERAL MOTOR CAPACITY IN SECONDARY SCHOOL STUDENTS FROM WESTERN MOLDOVA**

*ABSTRACT OF PHD THESIS*

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## INTRODUCTION

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Throughout history, mankind has always been concerned with identifying ways to obtain optimal health, forming a strong and harmonious body.

The influence of environment on physical activity and individual is the focus of a research report in March 2011 conducted by Cavill and Roberts of the University of Oxford. The result of the study is that the environment influences the individual's physical activity and indirectly its health. Also, in France, Bertrais et al. (2004) concluded that physical activity can facilitate the subjects participating in the study if one takes into account the environment variable.

In this research, the main objective is to analyze the distribution of general motor ability of middle school students in different levels of altitude in Western Moldova (used the first time by Muntele, 1998).

To make the thesis, we started from the following hypotheses:

*H1: relief altitude affects differentiated the motor ability in 5th grade students from Western Moldova.*

*H2: cultivated areas differentially influences, through alimentation, motor capacity on 5th grade students from Western Moldova.*

*H3: animal breeding differentially affect, through food, motor capacity in 5th grade students from Western Moldova.*

General hypotheses outlined in their turn, secondary hypotheses to be investigated in order to confirm or exclude them:

*H1a: relief altitude affects differentiated somatic indices of 5th grade students from Western Moldova;*

*H1b: relief altitude affects the areas planted in areas under study;*

*H1c: relief altitude affects animal breeding in areas under study;*

*H2a: cultivated areas influences differentiated somatic indices of 5th grade students from Western Moldova;*

*H3a: animal breeding influences differentiated somatic indices of 5th grade students from Western Moldova.*

## THE PURSUIT OF THE NATURAL ENVIRONMENT RESEARCH

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Population geography is a fundamental component of human geography as people are the most active element of the nature- society system as creative producing, consuming and deeply transforming its living environment. With the 46200 km<sup>2</sup>, Western Moldova ranks prominently in the national context in terms of population density.

Demographics interdisciplinary however, partially overlapping, to varying degrees, other disciplines including Geodemographics (considered a branch of human geography, concerned with analyzing the distribution of demographic components, dynamic or structural in geographical space, seen as a support for them) .

The analyzed region overlaps all or part of the following units or subunits of relief: Moldavian Plateau, the Moldovian Subcarpathians, the Vrancea Subcarpathians, Bukovina and Maramureş Mountains, Moldavian-Transylvanian Carpathians (Eastern), Curvature Carpathians (Romania Geography, Vol IV, 1992). All these physical geographical subunits correspond to the socio-administrative counties: Botosani, Suceava, Iasi, Neamt, Vaslui, Vrancea, Galati, Bacau.

The topography influences the thermal regime of land. In particular, the amount of heat received by the soil is subject, in addition to latitude and season, slope and its exhibition. The slopes with southern exposure and the eastern and western exposure, heat longer and are drier than northern exposure. This influences the activity of micro-organisms on top of the soil.

Soil - considered a limited resource - is one of the most precious objects indispensable to mankind, because maintaining life on earth plants, animals and man. Rainfall influences soil formation and evolution continues through water that infiltrates into the soil or in various lithological stores and minerals alteration contribute, rocks, ensuring water needs of plant and animal organisms in the soil.

Ambient temperature is the most important climatic factor affecting the reliability of both goods they operate as well as humans.

## ELEMENTS OF CONSUMPTION RESEARCH AREA

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Agricultural activity uses the dedicated crop grown or grazing, subject to the vagaries of climate or terrain instability. Therefore, agriculture is "the most dependent of human activities on the natural conditions" (Iațu, 2002).

To enhance motor performances, children are guided to optimize nutrition. Food intake must have a high level both in terms of quality and quantity. A balanced food ration needs as constituted power means (macronutrients: lipids, carbohydrates, proteins) and non-energy substances (water and micro-nutrients - vitamins and mineral salts) (Cordun, 2011).

For the analysis necessary to the study, comparing areas under different agricultural items. The quantities of vegetables for domestic consumption depended mainly by the yields obtained, whose level was determined by climatic conditions.

Therefore we pursued the hypothesis that subjects living in different altitude floors mainly consume products that are obtained by harvesting and processing them.

It supports the idea that both animal products (meat, milk, eggs) and cereals, tubercle and plants vegetables are found (by turning them into food), the daily caloric intake of the individual and therefore research has focused on the study thereof. For this reason were considered:

- ✚ wheat - basic and cereal plant that occupies an important place in Romania in size, with 2.135 million hectares planted (INS, 2013);
- ✚ corn - the crop with the highest acreage in Romania (47,1%);
- ✚ potatoes - is grown in all regions of Romania on an area of 208,000 hectares (INS, 2013);
- ✚ beans - leguminous plant that is an important source in human nutrition.

Also the study included using the total number of animals (cow, sheep, pigs) and birds in determining influences on students motor ability.

## FUNDAMENTAL ASPECTS OF PHYSICAL EDUCATION IN SECONDARY SCHOOL STUDENTS

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Structuring sanitary rules and their application in the life of children and youth communities is based on the understanding of the types of relationships between young body and natural and social environment.

Each stage of growth and development of children with specific rules particularity of their age, should be well known by the teacher. Motor expression is everything produce or carry a body when one (Albu, 1999). Middle school age (10-12 years) is the age at which students progress particularly outstanding in terms of motor ability (Zaharia 2011).

In any form of physical education, the general principle of multilateral physical development is reflected in the need for unity, general organic bonding and special physical training.

For secondary school students to use specific means to succeed in developing general motor ability, the teacher should organize the teaching process for addressing the two issues: the development of motor skills and strengthen motor skills luggage (Stanescu, 2012).

Motor capacity is defined (Epuran et al., 1973), as "all natural and acquired motor possibilities that can be achieved through various efforts and dosing structure".

Cârstea (1997) defines motor ability as "a dynamic human potential caused by the unity and interdependence of the qualities and motor skills."

There are two types of motor capacity (Cojocariu, 2010): general motor capacity (consisting of basic motor skills and motion skills and applicative tools) and specific motor capacity (different branches of sport and various crafts).

The curriculum is the way in which teachers pursue general objectives of disciplines. In this case, in the 5th grade, the children will be like during school manage to take a number of specific motor activities, activities which were evaluated using samples mentioned.

## ORGANIZATION AND DEVELOPMENT OF THE RESEARCH

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For the study, we analyze a group of schools and colleges in Western Moldova spread over an optimal altitude range, the aim being that the results be carefully represented and analyzed in order to confirm or refute hypothesis thesis.

After Erdeli and Dumitrache (2001, adapted from Stasezewski, 1957) altitudinal range where most of the population lives Europe (92.3%) is between 0-800 m. Iordache (2009) states that "over 56% of the country's inhabitants live in the plains and low hills up to 200 m altitude, collinear regions, the plateau with elevations up to 800 m concentrated over 42% of the total population, the remaining 2% back mountain regions ". For this reason, pursued research localities were divided into 4 levels: 0-200 m, 200-400 m, 400-600 m, 600-800 m.

Schools were analyzed to validate the study are grouped as follows: 8 schools in Botosani, 16 schools in Iasi, 13 schools in Vrancea, Vaslui 2, 30 in Suceava, one of Bacau. Were tested 2335 5th grade students of which 1208 boys and 1127 girls.

In the measurements, we used a series of assessments that focus on somatic motility and measurements of fifth grade students.

Somatic measurements aimed height, weight and traction tests included:

- ✓ shuttle speed 10 x 5 m;
- ✓ pushups;
- ✓ throwing the ball of the place;
- ✓ squats;
- ✓ long jump from the spot;
- ✓ crunches;
- ✓ trunk extension.

The results were interpreted using different statistical methods, correlation between the variables can be interpreted in four different ways: the Pearson linear correlation plot analysis, principal component analysis, analysis of variance (ANOVA) and analysis of covariance (ANCOVA).

## CONCLUSIONS AND PROPOSALS

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This research entitled **"Impact of geodemographical structures on general motor capacity in secondary school students from Western Moldova"** aims to analyze the existence of motor differences of children by geodemographical factors of the area in which they operate.

The values obtained in this research, in conjunction with statistical analysis performed to demonstrate the causal thereof, may highlight some general conclusions:

- ✓ general hypothesis H1 is supported in part;
- ✓ general hypothesis H2 is supported in part;
- ✓ general hypothesis H3 is supported in part;
- ✓ secondary hypotheses - H1a, H2a, H3a are refuted;
- ✓ secondary hypotheses H1b and H1c partially confirmed.

In terms of the proposals, the good results of children from 0-200 m altitude tests that focused on upper limb strength, coaches may constitute grounds for handball, basketball, spear throwing etc. to channel the selection process at this altitude.

Also evidence from athletics coaches (for long jump with enthusiasm, and high jump), or various sports technicians whose legs predominantly use force, can guide children living at an altitude of 600 m to the sport with these performance characteristics.

For specialists in the geography field, highlights the effects of altitude differences theme addressed by analyzing concrete interferences between population, areas which they cultivate certain agricultural items (wheat, corn, beans, potatoes) and total number of animals tracked in the study (cow , sheep, swine, poultry).

Finally, we can say that our environment has a crucial influence on the health and performance of the individual, therefore, recommend the conduct of its protection and conservation, delaying the positive results occur on different conceptual plans (sports, agriculture, medicine).

## SELECTED REFERENCES

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1. Albu, A., (1999) - *Psihomotricitatea la vârsta de creștere și dezvoltare*, Ed. Spiru Haret, București, 202p.;
2. Bertais, S. et al., (2004) - *Sociodemographic and geographic correlates of meeting current recommendation for physical activity in middle-aged French adults*, American Journal of Public Health no 94;
3. Brrault, D., (1999) - *Hygiene de vie de l'enfant champion*, Cinesiologie – La revue internationale des medecins du sport, No. 187, Paris, 195p.;
4. Cavill, N., Roberts, K., (2011) - *Sources of data for investigating the influences of the environment on physical activity and diet*, Oxford: National Obesity Observatory, www.noo.org.uk.;
5. Cârstea, Gh., (1997) - *Educația fizică: Teoria și bazele metodicii*, A.N.E.F.S., București, 220p.;
6. Chirazi, M., (2014) - *Elemente de cercetare aplicate în activitățile motrice*, Ed. Universității "Alexandru Ioan Cuza", Iași, 101p.;
7. Cojocariu, A., (2010) - *Fundamentele teoretice ale educației fizice și sportului*, Ed. PIM, Iași, 190p.;
8. Cordun, M., (2011) - *Bioenergetică și Ergometrie în Sport*, Ed. CD Press, București, 303p.;
9. Dehnert, C., Hutler, M., Liu, Y., (2002) - *Erythropoiesis and performance after two weeks of living high and training low in well trained triathletes*, Int J Sports Med, 23(8);
10. Epuran, M. și colab., (1973) - *Terminologia educației fizice și sportului*, Ed. Stadion, București, 431p.;
11. Erdeli, G., Dumitrache, L., (2001) - *Geografia populației*, Ed. Corint, București, 287p.;
12. Gavăt, V., Albu, A., Petrariu, F., (2006) - *Alimentația și mediul de viață în relație cu dezvoltarea copiilor și tinerilor*, Ed. "Gr. T. Popa", Iași, 301p.;
13. Gough, C.E., Saundres, P.U. and co, (2012) - *Influence of altitude training modality on performance and total haemoglobin mass in elite swimmers*, European Journal of Applied Physiology, vol. 12;
14. Iașu, C., (2002) - *Geografia economică*, Ed. Economică, Iași, 267p.;

15. Iordache, C., (2009) - *Geografia populației și așezărilor umane din România*, Ed. Universitaria, Craiova, 208p.;
16. Levine et al., (2008) - *Effect of altitude on football performance*. Scand J Med Sci Sports, 18 (1);
17. Muntele, I., (1998) - *Populația Moldovei în ultimele două secole*, Ed. Corson, Iași, 257p.;
18. Public Health England (2013) - *Obesity and the environment: increasing physical activity and active travel*, Wellington House, 133-155 Waterloo Road, London, [www.gov.uk/phe](http://www.gov.uk/phe);
19. Saltin, B., (1996) - *Exercise and the environment: focus on altitude*, Research Quarterly for Exercise and Sport, suppl. Special Issue, SUA, 67;
20. Secu, C.V., Patriche, C.V., (2007) - *Solurile lumii - clasificare, răspândire, caracteristici*, Ed. Terra Nostra, Iași, 288p.;
21. Stănescu, M., (2012) - *Didactica educației fizice și sportului*, Ed. Universitară, București, 271p.;
22. Strey-Gundersen, J., Levine, B.D., (2008) - *Live high, train low at natural altitude*, Scand J Med Sci Sports, 18 (1);
23. Torje, D. și colab., (1972) - *Soiuri de plante agricole cultivate în România*, Ed. Ceres, București, 395p.;
24. Turek-Rahoveanu, A., Turek, M., Zahiu, L., (2009) - *Analiza filierei sectorului legume-fructe în România*, Ed. Ars-Academica, București, 342p.;
25. Zaharia, E., (2011) - *Studii și cercetări asupra dezvoltării forței și vitezei în lecțiile de activități sportive folosind metode și mijloace specifice handbalului*, Ed. Sfera, Bârlad, 50p.

\*\*\* *Geografia României* (1992), Vol.IV, Ed. Academiei Române, București.

\*\*\* *Institutul Național de Statistică*.

\*\*\* *Organizația Mondială a Sănătății*.

\*\*\* *Recensământul General Agricol din anul 2010*.

\*\*\* *Sistemul Național de Evaluare*.

\*\*\* *Evaluarea potențialului somatic, funcțional și motric al populației școlare din România (2011)* proiect M.E.C.T.S. în colaborare cu U.N.E.F.S.