

YES, PHYSICAL ACTIVITY IS IMPORTANT

The Center for the Study of Measurements of Physical Activity (CEMA) has measured the strength and other aspects of the physical condition of Colombian students based on indicators related to their height and weight. It has also evaluated similar programs impacting the health of adults.

Colombia now has scientific evidence of the poor physical condition of adolescents in Bogotá and other cities in the country. This conclusion is supported by a clear data set with indicators of the height and weight of Colombians, and not of people from the United States or Europe, as was the case until recently.

There is also corroborated information on the effects of physical activity on the muscular architecture of those with conditions such as high blood pressure (HBP) or who are recovering from an illness, as well as data on the impact of official programs such as *ciclovía* (a cycling program run in Colombia's major cities) on the health of city dwellers. "One problem in determining the relationship between physical activity and health is that we don't know how to quantify the effects of physical activity on different facets of health. For this reason, we decided to measure these factors more rigorously and quantify them to create scientific evidence for this interface. This is what lies behind our setting up this Center."

Jorge Enrique Correa Bautista is the director of the Center for the Study of Measurements of Physical Activity (CEMA) at the Universidad del Rosario's School of Medicine and Health Sciences. He organized this important project, through which the University uses research to promote and demonstrate the various benefits for health of physical activity.

THE ONLY CENTER WITH THIS FOCUS

"We are the only research center that takes this approach. There are already centers for studying physiology, sports, and high-performance activities, but none specifically focusing the relationship between physical activity and health," says Correa.

CEMA was founded six years ago, but research in this field dates from 1999, when Correa and other professors decided to form a research group to study the effects of physical exercise on health. "At that time, the question was physical exercise," Correa explains, "which was a narrower category. When we took the leap and got more ambitious about what we wanted to study, we looked to the broader category of physical activity."

With this evolution in thinking, the group came to focus on physical activity and explored its beneficial effects in other areas of human life such as physical condition, thought processes, self-esteem, and other aspects of mental and physical health.

GENERAL STRENGTH IS NOT VALUED HIGHLY ENOUGH. EVERYBODY TALKS ABOUT AEROBIC, JOGGING, AND RUNNING CAPACITY, BUT WE NEED TO STRENGTHEN OUR MUSCULOSKELETAL SYSTEM AS WELL

FROM RESEARCH GROUP TO RESEARCH CENTER

As a group, the researchers attracted funding for their projects from official institutions such as the health departments of the city of Bogota, the Cundinamarca local administration, and the Institute of Recreation and Sports.

Despite these achievements, they wanted to greatly broaden their research, which required a more complex and interdisciplinary structure that could integrate the existing health programs at the University in the areas of Psychology, Medicine, Physical Therapy, and Biomedical Engineering.

The interdisciplinary structure that integrated these disciplines allowed them to conduct in-depth research on physical activity and its relationship to health, and to focus on a topic of special interest: the measurement of its effects.

In 2011, Correa proposed the establishment of the Research Center to administrators of the Medical School and the University, and they approved the initiative. That was the



birth of CEMA in its present-day form. The first instrument designed by the Center was a battery of indicators to measure prehensile strength among students.

STRENGTH TRAINING

“General strength is a physical quality that we have undervalued. Everybody talks about aerobics, jogging, and running, but we need to strengthen our musculoskeletal system as well, and scientific literature demonstrates that strength



← Through its research, the University promotes physical activity that brings multiple benefits for health.



training is highly beneficial to cardiometabolic health,” says the professor.

To evaluate subjects’ strength, CEMA designed an indicator that set cut-off thresholds for the normal range of strength for Colombian youth in proportion to their height and weight. In other words, it mapped out scientifically-valid statistical curves that were not previously available in the country.

The work itself was actually performed by the team from the Association of Prehensile Strength with Early Manifestations of Cardiovascular Risk in Colombian Children and Adolescents (FUPRECOL) which, since 2014, has been developing a series of staggered measurements taken in public and private schools around the country.

One measurement was the physical well-being of students in Bogotá, a task performed through an agreement with the capital’s local education department. Using SER testing over



TWO OUT OF EVERY TEN NINTH GRADE STUDENTS ARE OVERWEIGHT



5.5 OUT OF EVERY 10 PRIMARY AND SECONDARY SCHOOL STUDENTS HAVE A POOR DIET



SIX OUT OF TEN PRIMARY AND SECONDARY SCHOOL STUDENTS ENGAGE IN PHYSICAL ACTIVITY FOR ONLY 2 HOURS PER WEEK, ALTHOUGH THE WORLD HEALTH ORGANIZATION RECOMMENDS 60 MINUTES PER DAY

Source: CEMA

the years 2014 and 2015, CEMA tested the physical condition of ninth grade students, 13-to-17-year-olds, at public, charter, contract, and some private schools.

In the first test, measures were taken of 42,305 students, and 55,856 students were measured in a second round. Instruments were designed specifically for this testing of Colombian students.



← The group focuses on physical activity and explores its beneficial effects in other areas such as physical condition, thought processes, self-esteem, and other aspects of physical and mental health.

THINKING OF THE FUTURE

Along with other projects, CEMA plans to continue research focused on children—including preschoolers—to evaluate their physical activities and conditions. This task will be carried out collaboratively with strategic international allies. It also plans to work on research projects involving patients being treated for cancer. CEMA will uphold its alliances with international institutions in Chile, UK, USA, and Spain.



← CEMA developed an indicator that could set cutoff points for the normal range of strength for Colombian children in proportion to their height and weight.

The research determined that students were not in good physical condition and did not engage in the minimum level of physical activity recommended by the World Health Organization, which is 60 minutes per day. It was also found that greater opportunities provided by schools in physical education and healthy life habits can compensate for the effects of low income and bad nutrition in poorer students. This was reported in *The Journal of Pediatrics*, one of the world's most respected scientific publications on child health.

With these important findings, FUPRECOL—throughout its different stages—has proved to be one of CEMA's standout projects.

Today, the Center is engaged in another key project, one that will shed light on the health effects of physical activity by 18-to-30-

STUDENTS IN COLOMBIA ARE NOT IN GOOD PHYSICAL CONDITION AND DO NOT ENGAGE IN PHYSICAL ACTIVITY FOR THE MINIMUM AMOUNT OF TIME RECOMMENDED BY THE WHO

year-old men, as measured by neurotrophins, cerebral markers that affect concentration and other cognitive functions.

“We are currently recruiting people for this study, which we call Brainfit. It will have a strong impact because it is the first research of its kind in Colombia. Initial results with 60 men will be available in June of this year. Why do we focus on men? It seems that the markers we are measuring are more stable in their brains than in women's brains, so we can more easily measure changes associated with physical activity,” says Correa.

More news will be coming out of the Center this year and in coming years, since it has five lines of research that include ongoing studies to measure all aspects of the relationship between physical activity and health. ■