Ground-breaking global study shows how fitter SA bodies could lead to a fitter SA economy with potential growth of $500 million (+R7 billion) a year

- *Vitality and RAND Europe publish a ground-breaking, global study on the economic impact of physical inactivity*
- *The 23-country study assesses how different physical activity improvement scenarios may affect the economy of countries up to 2050, and shows the significant influence of regular exercise on economic growth, workforce productivity and life expectancy*
- *It shows that if the inactive population walked ±20 min a day, the world economy would gain $220bn annually, the individual 2.5 years of life and business 5 additional productive days a year*
- *If South Africa succeeds in getting adults 20% more active over the next 30 years, the average GDP will increase by USD $500 million (+R7 billion); and if all inactive people reach the minimum WHO physical activity levels, GDP will increase by between USD$1.6 and USD$2.1 billion*

Study rationale

- According to the World Health Organization (WHO) insufficient physical inactivity is recognised as one of the leading risk factors for death, posing a global public health problem. Globally, it is estimated that every year, physical inactivity is associated with more than 5 million deaths and is contributing to global healthcare expenditures, as well as lost productivity. While many countries have developed national action plans to tackle growing prevalence of physical inactivity, gaps challenges persist with their implementation, often associated with an uncoordinated or underfunded approach.
- Physical inactivity is associated with the onset of a number of different diseases, including cardiovascular disease, stroke, diabetes and cancer (e.g. breast or colon). Physical inactivity is also associated with a mortality and morbidity burden. A healthy population has a positive effect on a country's economic output (e.g. measured as gross domestic product). Reducing physical inactivity has a positive effect on a country's labour force by reducing premature mortality and improving rates of sickness absence and levels of presenteeism.
- We believe the implications of this study can be far-reaching, informing policy around the world on issues of public health and state budgets.

Methodology

- RAND Europe used a dynamic computational general equilibrium (DSGE) macroeconomic model in this study. DSGEs are used in macroeconomics to explain economic phenomena, such as economic growth and business cycles, and the effects of economic policy, through econometric models based on applied general equilibrium theory and microeconomic principles. The model has been extensively peer reviewed and tested.
- The productivity data stems from data collected as part of Vitality UK's Britain's Healthiest Workplace (BHW) Survey, as well as AIA's Asian Healthiest Workplace Survey. In both, employers are asked about their provision of health and well-being interventions, while employees are asked over 100 questions related to demographic factors (age, gender, education, income), lifestyle and health behaviour (nutrition, smoking habits, physical activity, sleep behaviour), health factors (mental and physical health indicators, chronic and musculoskeletal conditions), as well as workplace productivity and job and life satisfaction. Overall, the sample pool was significant, yielding a collective sample size of 120 143 across seven countries.
- Multivariate regression models were employed to investigate the associations between physical activity and a set of outcome measures, including workplace productivity, quality of life and a set of sleep measures. Depending on the analysis, physical activity is included in the analysis as two variables. First, as a binary indicator taking the value one if the individual regularly achieves the recommended level of physical activity per week (e.g. 150 minutes of moderate or 75 minutes of vigorous physical activity[1]) or

[1] Both roughly corresponding to about 600 MET minutes per week.

zero otherwise. Second, as a continuous variable measuring the MET minutes an individual of physical activity an individual performs every week.

- To measure work engagement, the workplace surveys include questions that build the Utrecht Work Engagement Scale (UWES), which includes three dimensions of work engagement: vigour, dedication, and absorption. The nine questions related to the scale are measured on a 7-point Likert scale.
- To investigate the relationship between physical inactivity and elevated mortality risk, the study uses meta-regression analysis. Meta-regression analysis is a form of systematic review employing a range of statistical methods to synthesise and evaluate specific empirical literature. It helps to better understand the existing research findings on a given empirical effect of interest.
- The study uses the MET unit as a measure for how much energy an individual exerts in performing a physical task. It a measure which adjusts for body size, and is defined as the amount of oxygen consumed while sitting at rest, equal to 3.5 ml oxygen per kg body weight per minute. Alternatively, one MET is defined as 1 kcal/kg/hour and is roughly equivalent to the energy cost of sitting quietly. For comparison, cycling is estimated to equal 3.5-16 METs and running 6-23 METs, depending on intensity.
- On attaining the associations between physical activity to productivity and mortality, these effects are then plugged into the DSGE model to yield the economic outcomes. The analysis on the future economic benefits of changes to physical activity at the population level is based on demographic projections on how the population of each country or region evolves over time. To that end, we demographic projections are generated using input data from the UN[2] and an adapted version of Chapin's cohort-component model, which are implemented as five-year projections using Stata. The cohort-component model starts with the current base population and is categorized for each country region by age, gender and skill level. The base population subsequently evolves by applying assumptions on mortality, fertility and migration rates. The outcome of the model is a projection of the population by (5-year) age, gender and skill groups up to thirty years, applied to each of the 24 countries or regions.

Annual GDP gain by country relative to the status quo (in 2019 USD billions present values), at specific years.

Based on all adults achieving a 20% increase in physical activity, as well as meeting at least the World Health Organization minimum requirements (scenario 3). For instance, assume the population of South Africa begins meeting the conditions of scenario 3 from 2020, it would gain $1.40bn in GDP in 2030 and so forth.

	2030	2040	2050
Argentina	1.21	1.88	2.82
Australia	5.72	8.14	11.23
Austria	1.16	1.32	1.48
Canada	5.93	7.00	8.15
China	32.77	59.44	99.71
Ecuador	0.24	0.38	0.57
France	7.44	8.46	9.49
Germany	12.36	13.64	15.27
Hong Kong	0.43	0.53	0.63
Japan	9.75	10.28	10.14
Malaysia	0.80	0.98	1.16
Netherlands	2.28	2.59	2.91
New Zealand	0.88	1.25	1.72
Pakistan	1.19	1.86	2.79
Philippines	0.92	1.43	2.14
Singapore	0.46	0.57	0.67
South Africa	1.40	2.20	3.06

[2] See http://esa.un.org/wpp/ for more information.

South Korea	3.43	4.11	4.72
Sri Lanka	0.30	0.46	0.69
Thailand	1.09	1.34	1.58
United Kingdom	9.49	12.13	15.05
United States	85.26	109.59	137.98
Vietnam	0.69	1.07	1.60
Rest of the World	89.61	132.24	188.19

Annual GDP gain averaged over 30 years, by country relative to status quo (in 2019 USD billions present values) shown for each scenario, quantifying the direct and indirect benefits.

Each scenario has a low and high value. The low values consider only the direct economic effects of physical activity improvement. The high values include all indirect effects of physical activity on the economy, indicating that improvements in activity levels can increase the estimated gains in GDP considerably more over time.

The low figures in the third table, for scenario 3, support global GDP growth of $360bn.

Scenario 1	**GDP Gain**		**Scenario 2**	**GDP Gain**		**Scenario 3**	**GDP Gain**	
Country	**Low**	**High**	**Country**	**Low**	**High**	**Country**	**Low**	**High**
Argentina	1.2	1.6	Argentina	0.6	1.0	Argentina	1.8	2.6
Australia	4.5	6.6	Australia	3.3	4.9	Australia	7.7	11.4
Austria	0.7	1.1	Austria	0.5	0.8	Austria	1.3	1.9
Canada	3.7	5.3	Canada	3.1	4.7	Canada	6.7	10.0
China	22.9	33.1	China	34.1	50.7	China	56.2	82.7
Ecuador	0.2	0.3	Ecuador	0.1	0.2	Ecuador	0.4	0.5
France	4.8	7.0	France	3.5	5.2	France	8.2	12.1
Germany	9.4	13.8	Germany	4.0	5.9	Germany	13.4	19.6
Hong Kong	0.3	0.5	Hong Kong	0.2	0.3	Hong Kong	0.5	0.7
Japan	7.5	11.0	Japan	2.6	3.9	Japan	10.0	14.7
Malaysia	0.6	0.9	Malaysia	0.3	0.5	Malaysia	0.9	1.4
Netherlands	1.5	2.1	Netherlands	1.1	1.6	Netherlands	2.5	3.7
New Zealand	0.7	1.0	New Zealand	0.5	0.7	New Zealand	1.2	1.7
Pakistan	1.1	1.6	Pakistan	0.6	0.9	Pakistan	1.8	2.5
Philippines	0.9	1.2	Philippines	0.5	0.7	Philippines	1.4	2.0
Singapore	0.4	0.5	Singapore	0.2	0.3	Singapore	0.5	0.8
South Africa	1.6	2.1	South Africa	0.5	0.7	South Africa	2.0	2.7
South Korea	2.9	4.3	South Korea	1.1	1.6	South Korea	3.9	5.7
Sri Lanka	0.3	0.4	Sri Lanka	0.2	0.2	Sri Lanka	0.4	0.6
Thailand	0.9	1.2	Thailand	0.4	0.6	Thailand	1.3	1.8
United Kingdom	8.1	11.8	United Kingdom	3.6	5.4	United Kingdom	11.5	17.0
United States	75.4	109.0	United States	30.5	45.4	United States	104.4	152.2
Vietnam	0.7	0.9	Vietnam	0.4	0.5	Vietnam	1.0	1.5
Rest of the World	69.6	98.5	Rest of the World	57.7	86.0	Rest of the World	125	182