COMMENTARY

The cost of physical inactivity to a nation: the role of sports medicine and its allied health professionals in preventing a crisis

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The problem

Chronic diseases pose both a humanitarian and economic problem to a country. While the prevalence of these diseases (coronary heart disease, obesity, type 2 diabetes, etc.) is not well documented in Africa, their meteoric rise is well publicised in the USA. It has been estimated[1] that chronic diseases affect 90 million Americans and cost up to $1 trillion in health care and lost production costs. Physical inactivity – defined as less than 30 minutes of activity per week – is often referred to as a modifiable risk of chronic disease. In fact, 28% of preventable deaths alone in 1993 were attributed to physical inactivity or factors in the diet.[1] But just how and why is physical inactivity such a potent risk factor for disease?

Booth *et al*.[1] return to early man and investigate evolutionary trends to develop their hypothesis. While our genotype has not changed much since the Late Paleolithic Era, our phenotype has been significantly altered by various 'advancements' in lifestyle. Early man's survival was based on an ability to subsist from the land, and was thus dependent on an appropriate phenotype for this function. It has been estimated that on average the energy expenditure of people living in contemporary society is only about 65% of the energy expenditure of the hominids from the Late Paleolithic Era. This translates into a mismatch for the level of physical activity coded for by our genome. Furthermore, by delving into early man's patterns of nutrition, it appears that cycling periods of food availability programmed the body to respond to physical inactivity in a particular way.[1] Periods of inactivity were associated with times of famine, and as a result insulin resistance and atrophy are thought to occur in skeletal muscle as potential survival mechanisms for humans. As a corollary, the rapid conversion of excess calories into adipose tissue during 'feast' times is thought to have been pre-programmed to prepare for periods of 'famine'.

If early man is to rural dwellers (non-migrants) what contemporary man is to urban migrants, this hypothesis gains support in a study of Guatemalan adults.[2] Not surprisingly, migration into an urban setting was associated with a significant decrease in physical activity. The migrants also tended to consume more fats overall and exhibited a relative increase in weight in comparison to their rural counterparts. The reduction in physical activity observed in urban settlers is multifactorial. Jobs are less labour intensive, amenities easier to access, and infrastructure and technologies more advanced in city settings, resulting in a decreased requirement for physical activity in urban dwellers.[2,3] In fact, sedentarism has been recorded at levels as high as 80% in certain developed countries.[4]

While physical inactivity is not the only cause of chronic diseases, it certainly is the most modifiable of all risk factors. Booth *et al*.[1] conclude: 'We know of no single intervention with greater promise than physical exercise to reduce the risk of virtually all chronic diseases'.

The solution

Although united under the associative banner of the Health Professions Council of South Africa (HPCSA), sports medicine and its allied health professionals are not yet one unified 'family'. Therefore it would be difficult to organise a public health outreach with such diverse medical roles and opinions. This is, of course, without mentioning the same diversity of opinions present in political and municipal bodies. Therefore, the aid of government, non-governmental organisations and other entities would be required to drive such an outreach programme. This is especially true with regard to resources and the dissemination of a clear, simple, yet effective message.[5]

The Agita São Paulo Programme is an example of an effective education programme which attempted to educate the 34 million mega-populated São Paulo State of Brazil on the benefits of physical activity.[6] A population of 34 752 225 people, in an area slightly smaller than the UK, comprising 645 municipalities, was targeted. A scheme using an eight-pillar base was implemented to achieve the objectives of the programme. Heading up the process for change was a research centre (pillar 1) – this was run by academic personnel from over 160 scientific and institutional partnerships (pillar 2). By using the academic assets afforded by pillar 2, a feasible 'one-step-ahead' model (pillar 3) was designed. This model developed specific messages that targeted individuals in the cycle of activity; the sedentary to become active, the moderately active to become more active, and the regularly active to maintain activity levels without injury. Empowerment (pillar 4) saw the encouragement of existing programmes, giving all of these programmes a common flag under which to unite. Inclusion (pillar 5) saw the replacement of traditional jargon such as 'sport' and 'fitness' by more effective phrases such as 'active living' and 'physical activity for health'. For effective exposure, a 'non-paid media' approach was taken (pillar 6) which made use of local newspapers and radio stations. Pillar 7 was that of social

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marketing, and involved various ‘agita days’ or ‘active days’. The benefit of these days was twofold: ‘Agita programme’ exposure and an opportunity for the public to experience the programme’s concepts practically. The final pillar (pillar 8) was that of ‘culture links’, and incorporated the important Brazilian concept of having fun at all times.[6]

The efficacy of the Agita São Paulo Programme is its greatest success, having educated 56% of the population that were originally targeted.[6] Of the sample that were educated by the programme, 55% of individuals met the activity recommendation of the programme. Furthermore, only 7% of the people that were educated were classified as sedentary in comparison with the 13% of those who were unaware of the programme. The Agita São Paulo Programme has been accepted as an effective model by the World Health Organization.

Sports medicine and its allied health professionals need to collaborate with government and its municipalities if we are to drive an effective South African Public Health Initiative as occurred in Brazil. The Agita São Paulo Programme is a fine example of how this scientific and medical collaboration can avert a national crisis at the hands of a chronic disease scourge.

References

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