

The recklessness of Sonic the Hedgehog

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Abstract

Sonic the Hedgehog is naturally very athletic and enjoys running at top speeds. His complete disregard for his well-being could lead to many health problems once he is past his teenage years. This paper discusses the problems that Sonic could face if he continues to ignore his health and some recommendations and preventative measures he could take.

Keywords: *Game; Biology; Sports Science; Physiology; Running; Sonic the Hedgehog*

Introduction

At just 15 years old, Sonic the Hedgehog has become a mascot for speed and an inspiration for Gymnasts and Parkour Free Runners around the globe [1, 2]. As Hyper Sonic, he can travel faster than the speed of light at around $3.0 \times 10^8 \text{ ms}^{-1}$ [3]. His raw pace, flexibility and natural athleticism confirms that he has the potential to become the best athlete known to man. However, his recklessness, cocky attitude and disregard for his wellbeing will lead to many health issues in the future.



Figure 1 - Sonic the Hedgehog pictured in his usual attire [1].

synovial tissue- this is called chondromalacia patella [5]. Overtime, this could lead to patellofemoral osteoarthritis [6]. It is recommended that he decreases the amount he runs and does low-impact activities instead- this will reduce the pressure on his knees. After a run, he should ice, compress, and elevate his knees to ensure a full recovery [5].

Cardiovascular Risks

Exercise is very good for your heart but at the extremity that Sonic exercises, it could be detrimental. Biomarkers have been found in the marathon runners' blood which link long distance running with heart damage. Overtime, increased stress and strain will result in physical changes in the heart such as scarring and thicker walls. He has a higher risk of a cardiac arrest during strenuous exercise [7]. Due to the overexertion that would happen on his heart from his intensive running, Sonic is highly likely to face these problems. To reduce these risks, Sonic should lower the amount he runs significantly.

Spinal Stress

Homing Attack (Figure 2) is Sonic's signature move. It requires him to constantly arch his spine. The prolonged pressure on his spine will lead to thoracic back pain which happens between your shoulder blades at the back of your thorax [9]. Traumas from hitting his spine further worsens this. A prevention is for Sonic to avoid straining his back and not do the Homing Attack move for too long. He should stretch

Runner's Knee

Running is Sonic's biggest strength but could also lead to his downfall. His intensive, constant running could lead to a condition called Patellofemoral Pain Syndrome (PFPS), often referred to as 'Runner's knee.' This originates in the patellofemoral joint by overusing the knee, causing inflammation which results in the swelling of the infrapatellaris bursa [4]. This causes pain in the tendons and the synovial tissue (lining of the knee joint). Without preventative measures, this causes the articular cartilage breakdown causing further inflammation of the



Figure 2 – Sonic performing a Homing Attack on Luigi from Super Smash Bros. this move involves somersaulting continuously in the air and simultaneously launching himself at an object [8].

and do yoga at least three times a week to increase his flexibility and avoid strains.

Head Trauma

The Homing Attack will also lead to head traumas for Sonic. Chronic Traumatic Encephalopathy (CTE) is caused by constant head injuries which lead to dementia. To avoid CTE, Sonic should wear protective head gear. Sonic must ensure that he contacts the GP if he starts to suffer from short-term memory loss, has issues with movement or starts to notice swift mood changes. It is hard to reverse the impacts of this but the progression of CTE can be halted [10].

Inappropriate Footwear

Figure 1 shows the types of shoes Sonic wears whilst running. Although these shoes have magical powers to enhance his running, the design is not suitable for him. The shoes have thin heel- this reduces their ability to absorb impact, making Sonic more likely to get a knee injury. The shoes are completely flat and smooth on the bottom which will hurt his feet over a long period of running and cause him to slip. Running shoes have a thick heel and heel-to-toe drop that imitates to the natural curve of the feet. This gives extra comfort whilst running [11]. They have grips at the bottom to stop the runner slipping. It is recommended he changes the design of his magic shoes to ones with a thicker heel, a curved bottom, a heel tab to protect his Achilles Tendon, gripped surface on the bottom to prevent him slipping and soft insoles for comfort [12].

Unbalanced Diet

Sonic's diet consists of solely 'chilidogs' which are hot dogs served with a sauce made up of beef, onion, cheese, and jalapenos [13]. From Figure 3, it is seen

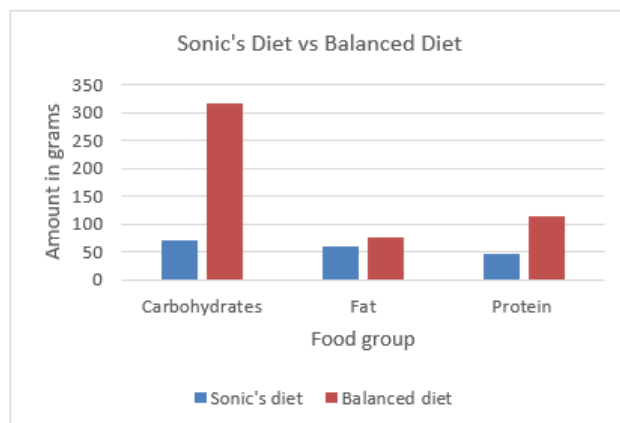


Figure 3 – Assuming Sonic eats Chilidogs for breakfast, lunch and dinner, this chart shows his intake of the major food groups compared to a standard recommended diet for a runner [15, 17].

that he is not fulfilling his daily dietary requirements. His caloric requirement is as follows:

*Assuming Sonic runs 3 hours a day:
30 calories per pound of body weight [14]*

$$30 \times 77lb = 2310 \text{ calories a day [1]}$$

Consuming chilidogs three times a day gives 1002 calories [15]. This is not enough for Sonics daily requirement and could seriously impact his physical health: it could slow down his metabolism, the circulation of blood, blood sugar levels and lower his bone density [16]. It is advised that Sonic eats a balanced diet as it will help maintain the appropriate body mass, body fat, body muscle tissue and body water level which will enhance his performances. His diet must have water, trace elements such as iron and calcium, vitamins that are fat and water soluble and essential amino acids and fatty acids integrated within it. Having the right diet will quicken the metabolic reactions in his body. The regulation of metabolism ensures that the energy and substrate needs are always met when he is active.

Conclusion

Sonic must look after his physical wellbeing more to prevent deteriorating his health further. He must ensure he decreases the amount he runs in a day significantly and makes sure his body fully recovers. He can take many preventative actions such as wearing appropriate running shoes and wearing helmet to avoid injuries. A balanced diet will help him significantly.

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