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Effect of Exercise on Memory – A Survey Based Research

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Abstract: ***Aim: This survey is done to examine the effects of exercise on memory. Objective: To prove that exercise plays an important role in increasing the potential of memory. Background: There are plenty of good reasons to be physically active. Big ones include reducing the odds of developing heart disease, stroke, and diabetes and other reasons like it can also improve memory and thinking. Exercise increases neurogenesis in the dentate gyrus of the hippocampus, which is important for memory function. New neurons are added continuously to certain areas of the adult brain, such as the hippocampus and olfactory bulb. Furthermore, trophic factors, associated with progenitor cell survival and differentiation alterations in synaptic strength , long-term potentiation and memory function are elevated after exercise.This research is actually done to assess the memory of students of age group 16-21 by asking a few questions related to it. Comparisons between two groups of students i.e.(those who exercise regularly and those who don't) were performed. Reason: To emphasise the importance of physical activity in the promotion of learning and memory functions.***

Keywords: Exercise, Memory,Cognition, Learning, Survey

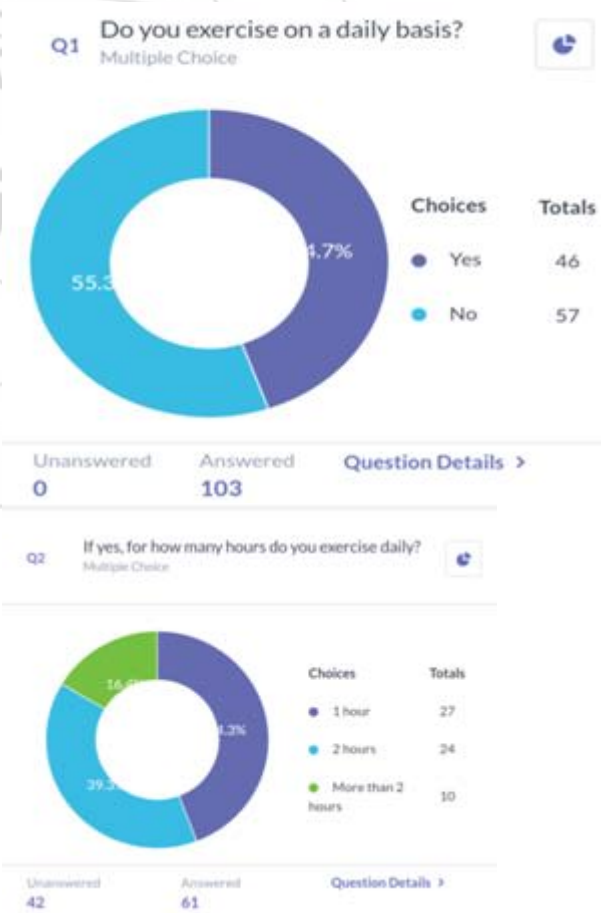
1. Introduction

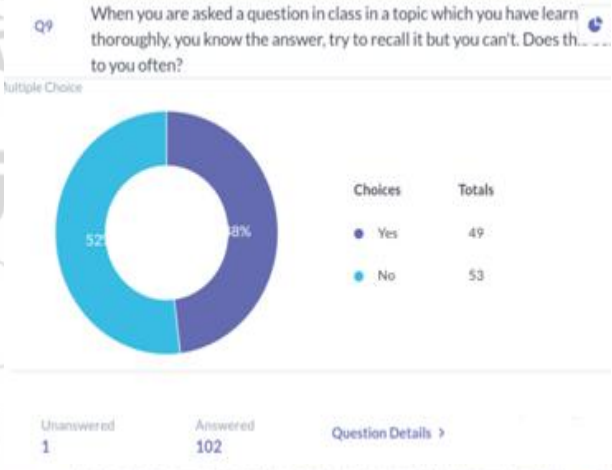
Since the time of the ancient Greeks, there has been an implicit belief that physical activity is linked to intellectual abilities. Cognitive science is characterised by the study of mental processes.Researchers in this field typically employ a componential-analysis approach to assess the operations of the mind (e.g., perception, attention, memory, information processing). Cognitive scientists usually employ theory-based tests and attempt to isolate and evaluate how various factors influence brain structures and mental processes. Several exercise scientists have assessed the impact of exercise training on specific components of children's mental function. Physical exercise, particularly aerobic exercise, shows promise as a low cost regimen to improve cognitive processes such as memory and executive functions in middle-age to older adult. Studies have revealed that maintaining brain health is an important public health goal, which physical activity or exercise can help us to achieve. Recently, many investigations have been conducted to examine the influence of exercise on cognitive functions and consequently, several biological mechanisms have been suggested to explain the effects of exercise on learning and memory. Exercise has also beneficial effects on brain functions including plasticity promotion and learning and memory enhancement. These data have indicated that exercise leads to changes at the level of a number of gene transcripts known to be associated with the neuronal activity, synaptic structure and synthesis of neurotransmitters that are important in memory processing.

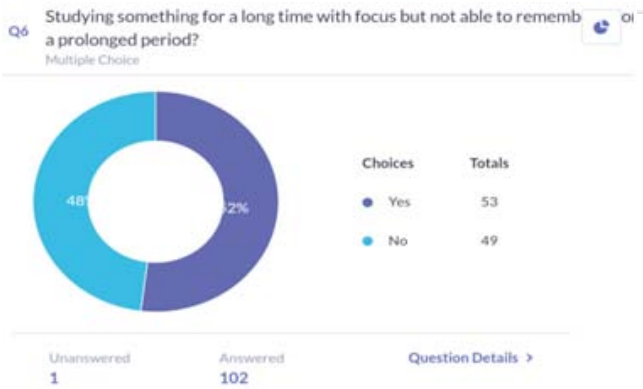
2. Methods and Materials

A cross-sectional survey was conducted among people of age group 16-21. This survey was conducted among people who do exercise regularly (especially aerobic exercises) and those who don't to determine the variations in their memory state. People of this age group who were willing to participate were included.A self structured questionnaire was distributed to some 103 participants and the data were collected .

3. Results







Totally about 103 people of age group 16-21 participated in this survey .This survey was taken among people who exercise regularly and those who didn't. Among the total 103 participants about 45%(i.e 46 people) of the people exercised regularly on a daily basis and 55%(i.e 57 people) of the people didn't. It's also happy that most of the people almost 80% of them know the importance of exercise.It was

also found that people who exercise regularly tend to forget things less than the persons who don't exercise . It's a result which we commonly found from questions 3,4,5,6,7,9,10.In these questions consistently the people who exercise had an advantage over the people who didn't, nearly 50% of the people who exercise regularly reported that they have no difficulty in remembering things.But in case of picking up a new skill even some the persons who don't exercise regularly found it easy.Almost 66% found it easy to pick up a new skill. But considering overall ,clearly the people who exercise regularly have an upper hand in memory. This makes us realise the fact that it's important to exercise daily.

4. Discussion

The objective of the study is to get a clear idea about the effect of exercise on memory among 16 to 21 year-old adolescents,through a self-administered questionnaire.The questionnaire was distributed among people of this age group who exercised regularly and those who didn't . Though these questions aren't that complicated it involved what people forget easily on a daily basis. From the results ,it's pretty clear that people who exercised regularly has a greater memory (ie) they tend to forget less than the people who didn't exercise. But there are some short comings too. Even the people who exercise regularly tend to forget some and the people who didn't exercise are able to do some of the things with ease ,for example, most of the people found it easy to pick up a new skill. Different factors may be mediated the beneficial effects of exercise on memory. The reason why exercise has a effect on memory is that during aerobic exercises , as some of the studies suggest ,neurogenesis is enhanced and also the plasticity in hippocampus [1,2,3,4,5]. In addition, exercise can increase neurotrophic factors[6], neurotransmitters and growth factors. Another effect of exercise is enhancement of non neural components of brain, such as vasculature[7,8] Other studies have shown that longterm potentiation (LTP) and memory function are elevated after exercise[9,10] and facilitate recovery from traumatic brain injury in mediating the exercise – induced enhancement in brain derived neurotrophic factors (BDNF). So from this it's clear that exercise has so much positive effect on memory

5. Conclusion

This Research addresses the impact of physical activity on children's physical health, mental function, and psychological well being is of critical importance. Authorities note that school and college administrators, who are faced with the demands of preparing children for standardised tests, have reduced children's time spent in systematic physical activity programs. The time spent engaged in physical activity .The present research findings suggests that systematic exercise programs may actually enhance the development of specific types of mental processing known to be important for meeting challenges encountered both in academics and throughout the lifespan. In conclusion,the results of my research emphasise the role of physical activity in the promotion of learning and memory functions.

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