

EVALUATION OF STRESS WITH FITNESS TRACKERS AND SMART WATCHES

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INTRODUCTION

Stress is a natural response of the body to a perceived threat. It can show up in various ways, such as increased heart rate, sweating, and even psychosomatic symptoms caused by the activation of the sympathetic nervous system. Stress can also affect a person emotionally and psychologically, causing negative feelings like worry, anxiety, sadness, and anger. Fitness trackers and smartphones are becoming increasingly popular in the general population for following health. Modern wearable devices can continuously measure heart rate, which can be used for following physiological stress responses.

We aimed to evaluate the prevalence of using fitness trackers and smartwatches among university students and the use of wearable devices for stress assessment in naturalistic settings.

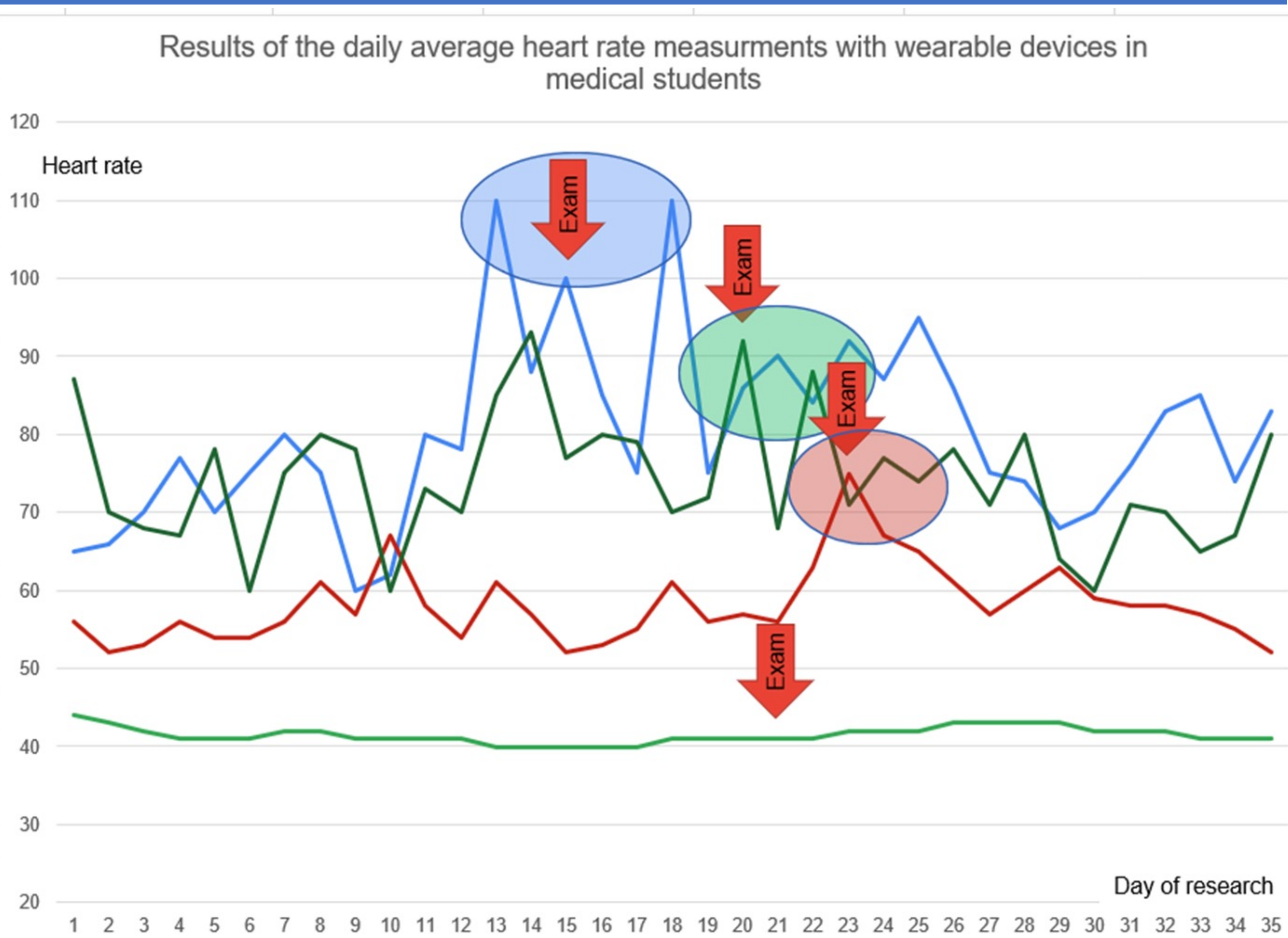


Chart 1 – Daily average heart rate measurements

RESULTS

45 of 170 students responded to the survey (response rate 26.5%). 21 responders (46,7%) use wearable devices, most of them for health and fitness purposes, 15 (71%) of them on a daily or regular basis (see Chart 2, 3). After thirty-five days of follow-up, four out of the initially participating ten individuals (one man and three women aged 24 to 30) provided results of their average heart rate. According to the measurement of the average heart rate with wearable devices, the highest average heart rate was observed during the day of the exam +/- 3 days (see Chart 1).

CONCLUSION

The use of fitness trackers and smartwatches in a naturalistic setting is popular for health and fitness purposes but not in relation to stress management. Additional research is needed to evaluate the causes of the low use of wearable devices in students and the role of wearable devices in stress diagnostics and management.

DISCUSSION

Fitness trackers were introduced during the last 10 years, in 2017 it was estimated that **93.36 million** people were users of smartwatches [1], and according to Statista [2] the estimated number of users worldwide are currently **224.27 million**. Out of **170 students** who were addressed with the survey, and among the **45 responders**, only **21** people were users of smartwatches. Among those 21 users, the main reason for using it as well as how often they use it, varied (see chart 2; 3). After evaluating literature and statistical data, as well as our own survey it seems as though management or tracking of stress with smart watches is a less frequent purpose of use. This could potentially be related to the limited accessibility and awareness of the evaluation of stress (e.g., watch/phone application).

Main purpose of fitness tracker and smartwatches use in students

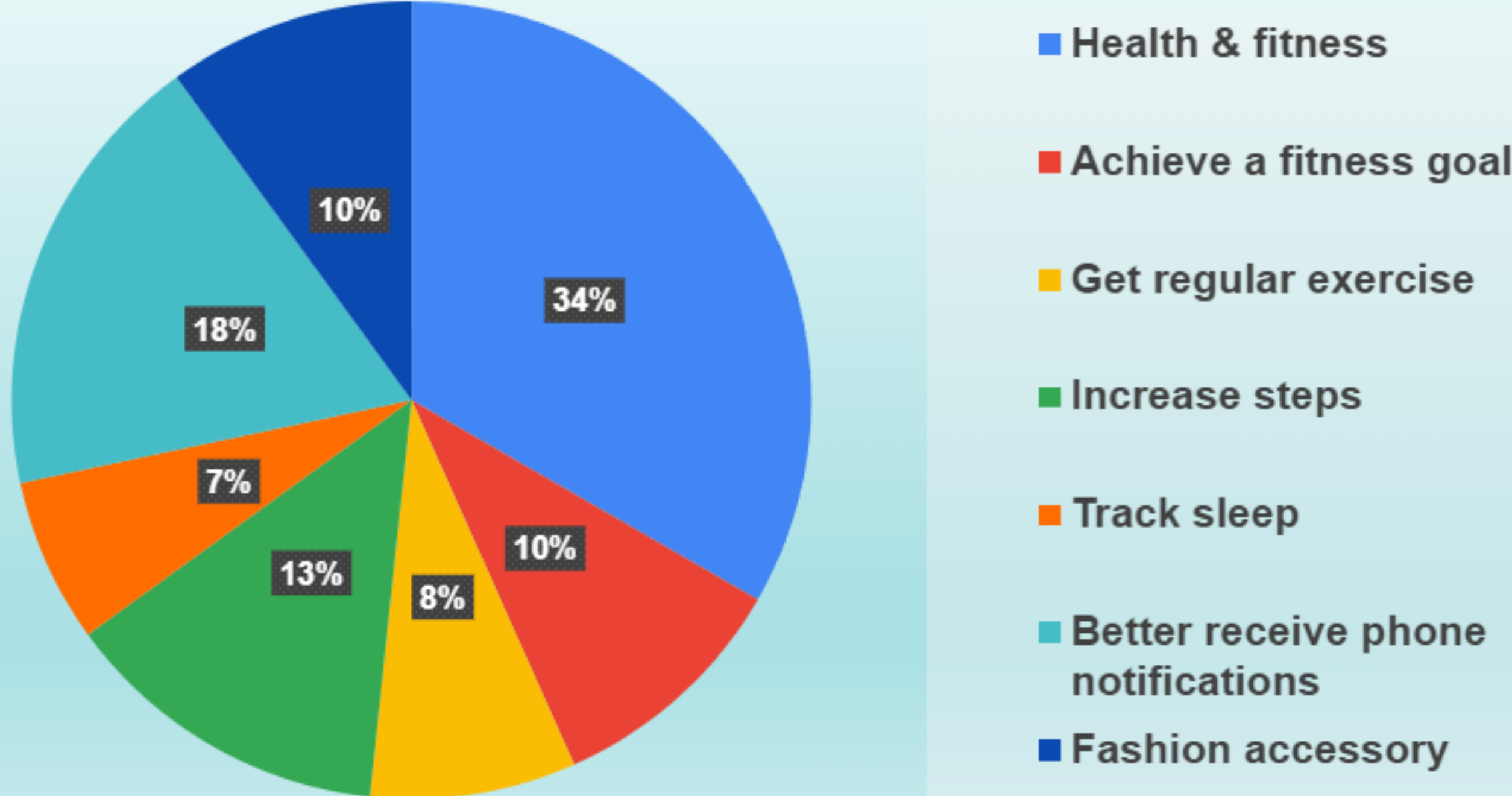


Chart 2 – Usage of wearable devices purpose

Frequency of use

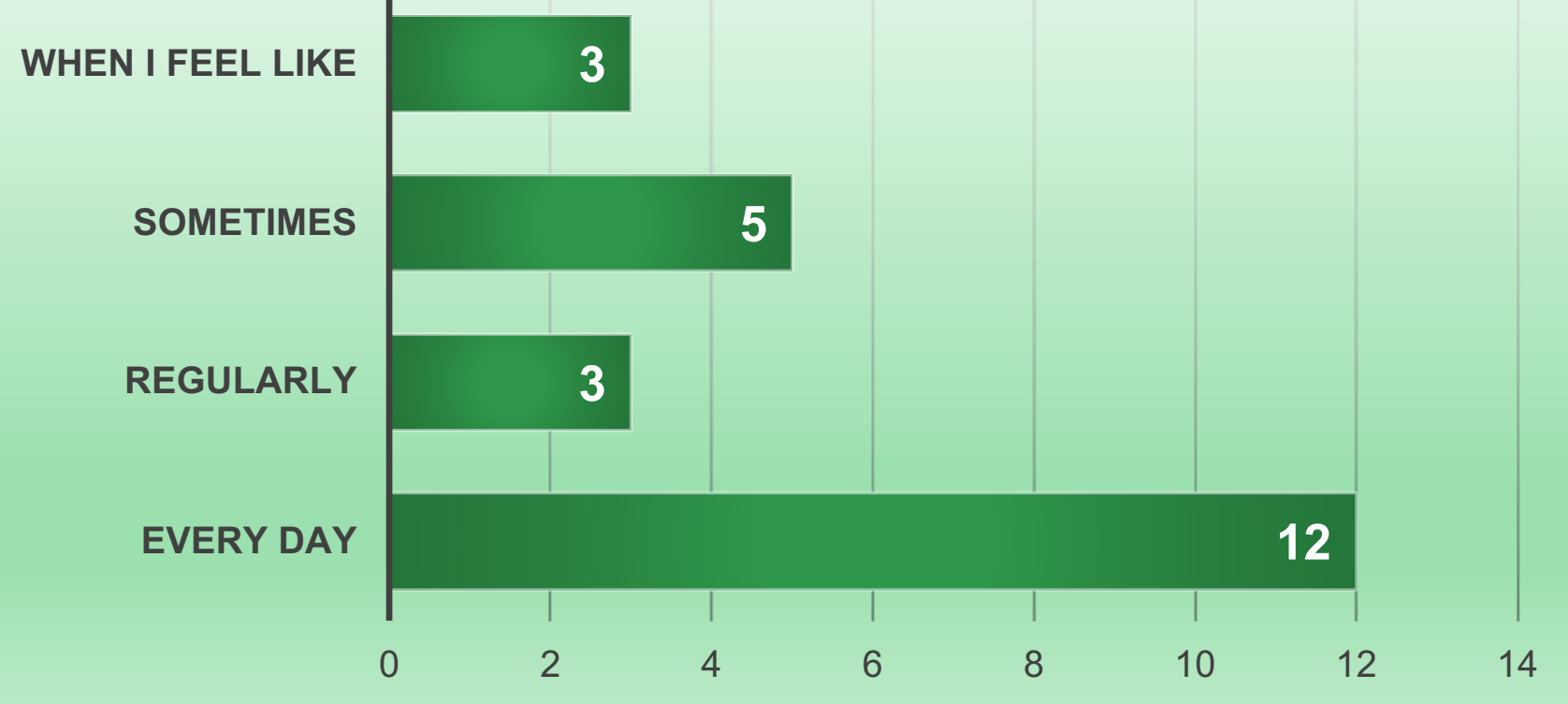


Chart 3 – Frequency of wearable devices use

Preference of wearable devices among students

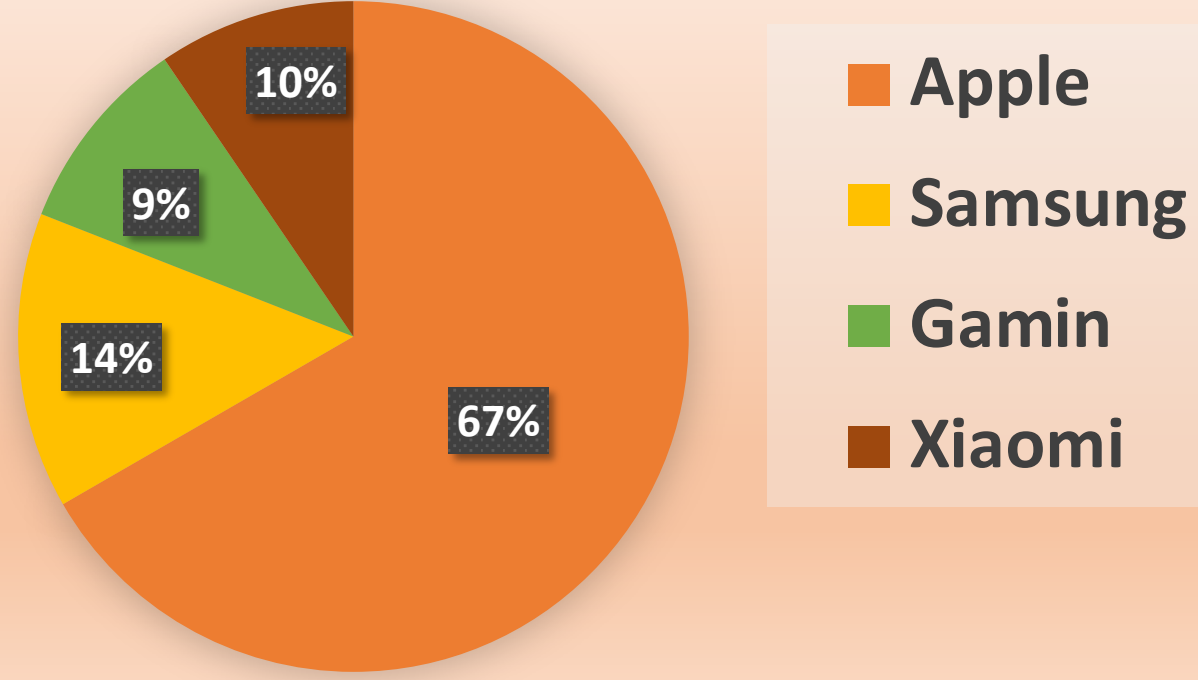


Chart 4 – Most common brand

References:

[1] https://www.demandsage.com/smartwatch-statistics/?_cf_chl_tk=W_JD1d6ly9rkB9Vy_zTIBRzcWWvMvKwX8a11z9Cm0g-1680775992-0-gaNycGzNDrs (Last access: 16.4.2023)
[2] <https://www.statista.com/forecasts/1314339/worldwide-users-of-smartwatches> (Last access: 16.4.2023)
The research was supported by grants IGA UP: LF_2022_005 and IGA UP: LF_2023_007