ASSESSING THE IMPACT OF PHYSICAL ACTIVITY ON ANXIETY LEVELS AMONG UNIVERSITY STUDENTS: A JASP-BASED T-TEST AND CORRELATION STUDY

1. Background and Research Objectives

A university's student health and wellbeing department commissioned a study to explore how **physical activity habits** relate to **anxiety levels** among undergraduate students. With rising reports of mental health issues on campus, the client sought data-driven insights to shape targeted wellness interventions.

Research Questions:

1. Is there a significant relationship between the frequency of physical activity and students' anxiety levels?

2. Do students who engage in regular exercise report significantly lower anxiety levels compared to those who do not?

2. Dataset and Variable Overview

- **Sample Size:** 184 undergraduate students

- **Method of Collection:** Online questionnaire distributed across university mailing lists

- **JASP File Type:** .csv converted and labeled in JASP environment

Variables Included:

Variable	Type	Scale	Description
Anxiety_Score	Continuous	0–63	Measured using the Beck Anxiety Inventory (BAI)
Exercise_Frequency	Categorical	Nominal	None, Occasional (1–2 days/week), Regular (3+ days/week)
Exercise_Binary	Categorical	Dichotomous	0 = No Regular Exercise (0–2 days), 1 = Regular (3+ days)
Gender	Categorical	Nominal	Male, Female, Non-binary
Age	Continuous	Years	Age of respondent

3. Statistical Methods Used in JASP

3.1 Descriptive Statistics

- Mean Anxiety Score = 23.8

- SD = 11.6

- Median = 21

- Histogram revealed slight right skewness

- Checked group sizes:

  - Regular exercise group (n = 78)

  - No regular exercise group (n = 106)

3.2 Pearson Correlation

- **Hypothesis:** Greater exercise frequency is associated with lower anxiety

Converted Exercise_Frequency to ordinal scale for testing: 0 = None, 1 = Occasional, 2 = Regular

JASP Output:

Variables	r	p-value
Exercise_Frequency × Anxiety_Score	**–0.37**	< .001

Interpretation: Moderate **negative correlation**, indicating that students who exercise more frequently tend to have lower anxiety scores.

3.3 Independent-Samples t-Test

- **Group Variable:** Exercise_Binary

- **Test Variable:** Anxiety_Score

- **Assumptions:**

  - Levene's Test for equality of variances: p = 0.14 → assumption met

  - Sample size acceptable for t-distribution robustness

JASP Output:

Group	Mean Anxiety	SD	n
No Regular Exercise	27.1	11.4	106

Regular Exercise	19.2	9.3	78

- t(182) = 5.31, **p < .001**

- Cohen's d = **0.81 → large effect size**

Interpretation: Students who exercise regularly report **significantly lower anxiety scores** than those who do not. The effect is both statistically and practically significant.

4. Visualizations (Created in JASP)

- **Boxplot:** Anxiety scores by exercise group

- **Scatterplot with line of best fit:** Exercise frequency (ordinal) × Anxiety score

- **Bar chart:** Distribution of anxiety severity levels (mild/moderate/severe) by exercise habits

All charts were exported in high-resolution PNG format and annotated for non-technical stakeholders.

5. Final Report and Deliverables

- Full statistical report in APA style (13 pages)

- Summary sheet (2-page insight report) for health center briefing

- JASP project file (.jasp)

- Raw dataset with variable dictionary

- PowerPoint slide pack with visuals and talking points

- Optional video walkthrough of analysis steps (for internal staff training)

6. Key Insights and Recommendations

- **Quantified Impact:** Regular exercise linked to a **~8-point reduction** in average anxiety scores

- **Policy Implication:** Supports institutional investment in structured physical wellness programs

- **Audience-Specific Communication:**

  o Academic: Provided effect sizes, assumptions testing, APA tables

o Administrative: Focused on interpretation, charts, and call-to-action for funding proposals

7. Academic and Organizational Relevance

- **Academic Use:** Suitable for psychology, public health, or student affairs research involving t-tests and correlational methods.

- **Corporate/Institutional Use:** Ideal for HR wellness initiatives, university student affairs, and program evaluation teams.