

# The influence of IQ, emotional and spiritual perceptions on sports participation in an effort to improve physical health

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## ABSTRACT

This study aimed to determine the influence of intellectual intelligence (IQ), emotional, and spiritual perceptions on sports participation to improve physical health. It employed a quantitative research design using a survey method, with questionnaires distributed to participants. A total of 100 respondents, comprising both men and women who were government employees, took part in the study. Data collection was carried out through questionnaires distributed via Google Forms and documentation. Data analysis was conducted using the Partial Least Squares (PLS) method with SmartPLS software version 3. The results of this research indicated that emotions had a positive and statistically significant effect on IQ ( $p < 0.05$ ), a negative and statistically insignificant effect on perceptions of physical health ( $p > 0.05$ ), and a positive and statistically significant effect on spirituality ( $p < 0.05$ ). IQ had a negative and statistically insignificant effect on perceived physical health ( $p > 0.05$ ). In contrast, spirituality had a positive and statistically significant effect on perceptions of physical health ( $p < 0.05$ ). This study suggested that for sports participants aiming to enhance their health through physical activity, it was beneficial to incorporate emotional intelligence, IQ, and spirituality. Consequently, the selection of sports activities should consider these factors (emotions, IQ, and spirituality) to maximize their positive effects.

## KEYWORDS

Physical Health; IQ; Emotional Intelligence; Spirituality; Sport

## **1. INTRODUCTION**

Intellectual Intelligence (IQ) is a form of individual ability to think, process, and master their environment and act in a directed manner (Makharia et al., 2016). This intelligence is used to solve logical and strategic problems. Meanwhile, Emotional Intelligence or Emotional Quotient (EQ) is the ability to recognize, control and manage one's own feelings and the feelings of others in depth.

Intelligence provides awareness of one's own feelings as well as feelings of belonging to others, provides a sense of empathy, love, motivation, and the ability to respond appropriately to sadness or joy (Ganuthula & Sinha, 2019). Spiritual quotient is individual intelligence in recognizing the source of one's enthusiasm by attaching oneself to the values of truth without a time limit (Ma & Wang, 2022). Spirituality is used to distinguish between good and bad, right and wrong.

Sports are divided into three pillars, namely educational sports, achievement sports, and recreational sports (Collings, 2020). Sport can be an educational medium that makes a pillar of harmony and a healthy and harmonious life balance. Through sports activities we get many positive things. Sport is not just an activity that is oriented to mere physical factors, sports can also shape a person's character and mentality related to intellectual development (Congsheng, Kayani & Khalid, 2022).

Participation is a person's mental and emotional involvement in achieving goals and being responsible for them. In this definition, the key to thinking is mental and emotional involvement. Participation becomes both in the physical and mental fields as well as determining wisdom (Chen, Zeng & Fang, 2022).

Participation in sports does not automatically have a positive effect on character building. Experience gained through sports can shape character, but this can only happen if a sports environment is created and aimed at developing character (Ghildiyal, 2015). Sport can form positive character if conditions that support a positive direction are fulfilled, for example good leadership and coach behavior. Support from coaches, parents, spectators, administrators, as well as from the players themselves is needed to gain positive benefits from sports participation.

Researchers have observed the emergence of many sports communities, such as bicycle clubs, shooting clubs, off-road clubs, and others. This phenomenon marks a turning point from the pandemic period, which required people to stay at home. Understanding how these communities form and the motives behind their existence is a significant area of research. Additionally, it is essential for participants in sports activities to consider physical health factors. Therefore, it is

necessary to develop products that guide the perception of IQ, emotional intelligence, and spirituality in the context of sports, recreation, and health.

The types of activities carried out by these communities are varied, including visiting tourist attractions, exercising, and other recreational pursuits. A current trend is the increasing participation in sports activities across different demographics, with a more significant rise observed in urban areas compared to rural ones. This is particularly true for State Civil Apparatuses (SCAs), who often have free time to exercise. The advantage is that SCAs have access to various sports facilities available in their offices, allowing them to engage in the sports they prefer. Sports have a strong connection to intellectual development, which is highly beneficial for SCAs in supporting cognitive function, with the primary goal being to improve physical health.

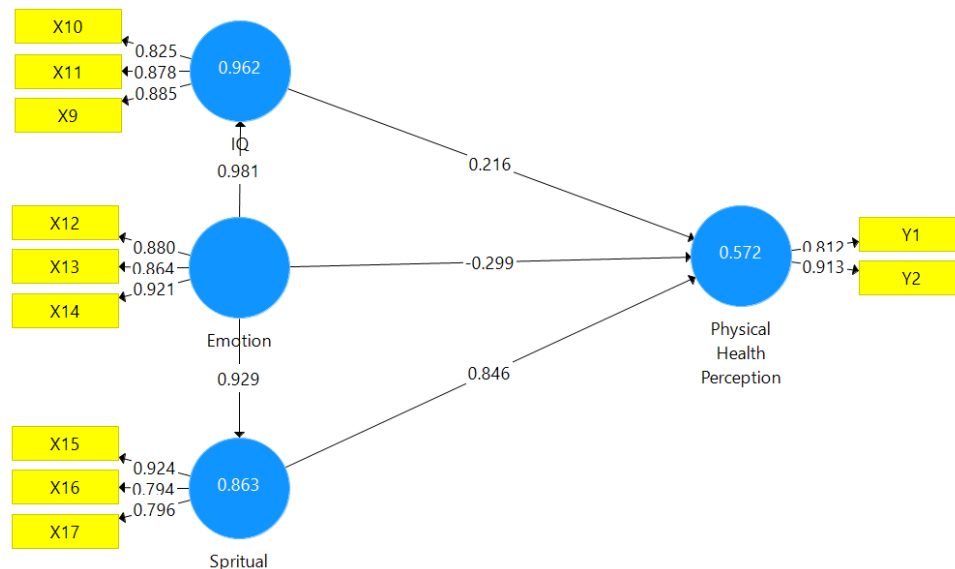
## **2. METHODS**

This study aimed to determine the effect of IQ, emotional, and spiritual perceptions on sports participation in efforts to improve physical health. It employed a quantitative research design using a survey method with questionnaires distributed to the participants. A total of 100 respondents, consisting of both men and women who work as government employees, took part in the study. The sampling technique used was non-probability sampling. Data analysis was conducted using the Partial Least Square (PLS) method with the SmartPLS software version 3.

## **3. RESULTS**

### **3.1. Test Indicator / Outer Model**

The outer model test is conducted to ensure that the measurement model is valid and reliable. To obtain valid results, the test was performed using the SmartPLS 3.0 program, with one iteration that involved eliminating any indicators with a loading factor below 0.06. The following figure is an illustration of the test results (Figure 1).



**Figure 1. Primary Data**

Table 1 presents the Average Variance Extracted (AVE) values for the different constructs measured in the study (emotion, IQ, perception of physical health, and spiritual).

**Table 1. Initial Output Average Variance Extracted (AVE) Value**

| Construct                     | AVE   | Status |
|-------------------------------|-------|--------|
| Emotion                       | 0.790 | Valid  |
| IQ                            | 0.745 | Valid  |
| Perception of Physical Health | 0.747 | Valid  |
| Spiritual                     | 0.706 | Valid  |

If the initial output results show an AVE value below 0.50, the necessary step is to eliminate indicators with values below the established threshold. However, in this first test, all outputs showed valid results. An indicator is considered valid if it has a loading factor above 0.50 for the intended construct. The SmartPLS output for the loading factor yielded the following results (Table 2).

**Table 2. Indicator outer loading**

|     | Emotion | IQ    | Perception of Physical Health | Spiritual | Status |
|-----|---------|-------|-------------------------------|-----------|--------|
| X10 |         | 0,825 |                               |           | Valid  |
| X11 |         | 0,878 |                               |           | Valid  |
| X12 | 0,880   |       |                               |           | Valid  |
| X13 | 0,864   |       |                               |           | Valid  |
| X14 | 0,921   |       |                               |           | Valid  |
| X15 |         |       |                               | 0,924     | Valid  |
| X16 |         |       |                               | 0,794     | Valid  |

|     |       |       |       |
|-----|-------|-------|-------|
| X17 |       | 0,796 | Valid |
| X9  | 0,885 |       | Valid |
| Y1  |       | 0,812 | Valid |
| Y2  |       | 0,913 | Valid |

Convergent validity is assessed not only through the loading factor values but also through the Average Variance Extracted (AVE) values. In this study, the AVE values for each construct/variable exceeded 0.50, confirming their validity (Table 2). The next step was to assess discriminant validity. Discriminant validity can be evaluated by examining the cross-loading table below (Table 3).

**Table 3.** Cross-loading values for construct validity

|     | <b>Emotion</b> | <b>IQ</b> | <b>Perception of Physical Health</b> | <b>Spiritual</b> |
|-----|----------------|-----------|--------------------------------------|------------------|
| X10 | 0,801          | 0,825     | 0,554                                | 0,686            |
| X11 | 0,876          | 0,878     | 0,553                                | 0,780            |
| X12 | 0,880          | 0,864     | 0,598                                | 0,831            |
| X13 | 0,864          | 0,860     | 0,581                                | 0,806            |
| X14 | 0,921          | 0,891     | 0,682                                | 0,840            |
| X15 | 0,870          | 0,833     | 0,683                                | 0,924            |
| X16 | 0,719          | 0,645     | 0,624                                | 0,794            |
| X17 | 0,744          | 0,693     | 0,595                                | 0,796            |
| X9  | 0,861          | 0,885     | 0,591                                | 0,774            |
| Y1  | 0,589          | 0,529     | 0,812                                | 0,605            |
| Y2  | 0,619          | 0,602     | 0,913                                | 0,698            |

Table 3 indicates that each item's loading value on its respective construct is greater than its cross-loading values on other constructs. This confirms that all indicators for the four variables are valid. Both convergent and discriminant validity tests were validated as all loading values exceeded 0.50. To ensure there are no issues with measurement, the final step in evaluating the outer model is to test its reliability by examining composite reliability. Composite reliability is considered satisfactory if it is above 0.70. Table 4 presents the composite reliability values obtained from the output. The table shows that the composite reliability values for all constructs exceed 0.70, indicating that all variables are reliable.

**Table 4.** Composite Reliability Value

| Construct                     | Composite Reliability | Status   |
|-------------------------------|-----------------------|----------|
| Emotion                       | 0,919                 | Reliable |
| IQ                            | 0,898                 | Reliable |
| Perception of Physical Health | 0,855                 | Reliable |
| Spiritual                     | 0,877                 | Reliable |

Source: Data processed from SmartPLS 3.0 output

The reliability test was further validated using Cronbach’s Alpha. The results from SmartPLS version 2 are as follows (Table 5):

**Table 5.** Cronbach’s alpha reliability values

| Construct                     | Cronbach's Alpha | Status   |
|-------------------------------|------------------|----------|
| Emotion                       | 0,919            | Reliable |
| IQ                            | 0,896            | Reliable |
| Perception of Physical Health | 0,852            | Reliable |
| Spiritual                     | 0,877            | Reliable |

Source: Data processed from SmartPLS 3.0 output

The recommended value for Cronbach’s Alpha is above 0.60. The table shows that all constructs have Cronbach’s Alpha values above this threshold, indicating that all variables are reliable. The lowest value is 0.852 for the “Perception of Physical Health” construct.

### 3.2. Structural Test / Inner Model

After the estimated model met the criteria for the outer model, the next step was to test the structural model (inner model). The R-square value, also known as the Coefficient of Determination (R<sup>2</sup>), was as follows (Table 6):

**Table 6.** Results of Coefficient of Determination (R<sup>2</sup>) Values

| Construct                     | R Square |
|-------------------------------|----------|
| IQ                            | 0,962    |
| Perception of Physical Health | 0,572    |
| Spiritual                     | 0,863    |

Source: Data processed from SmartPLS 3.0 output

The table above indicated that the coefficient of determination R<sup>2</sup> in this study:

1. Demonstrated that the perception of physical health was influenced by personal emotions by 57.2%, with the remaining 46.8% influenced by other factors not included in the model.
2. Showed that spirituality was influenced by one's own emotions by 86.3%, with the remaining 13.7% influenced by other factors.

3. Revealed that IQ was influenced by emotions and perceptions of physical health by 96.2%, with the remaining 3.8% influenced by other factors.

In addition to evaluating the effects between each latent variable and the R<sup>2</sup> values, the quality of the model can be assessed by calculating the Q-square predictive relevance (Q<sup>2</sup>). The results of these calculations are as follows (Table 7):

**Table 7.** Q-Square predictive relevance (Q<sup>2</sup>) and construct cross-validated redundancy

| Construct                     | SSO     | SSE     | Q <sup>2</sup> (=1-SSE/SSO) | Criteria |
|-------------------------------|---------|---------|-----------------------------|----------|
| Emotion                       | 300,000 | 300,000 |                             |          |
| IQ                            | 300,000 | 105,359 | 0,649                       | Strong   |
| Perception of Physical Health | 200,000 | 128,569 | 0,357                       | Strong   |
| Spiritual                     | 300,000 | 134,607 | 0,551                       | Strong   |

*Source: Data processed from SmartPLS 3.0 output.*

Q<sup>2</sup> is calculated as follows:

- $Q^2 = 1 - (1-R_1^2)(1-R_2^2)(1-R_3^2)$
- $Q^2 = 1 - (1-0,141)(1-0,414)(1-0,585)$
- $Q^2 = 0,7911$

The Q<sup>2</sup> value of 0.7911, which is greater than 0, indicates that the model has strong predictive relevance.

Table 8 presents the path coefficients, standard deviations, t-statistics, and p-values for the relationships between various variables, such as emotion, IQ, spirituality, and perception of physical health.

**Table 8.** Path coefficients and significance of relationships among variables

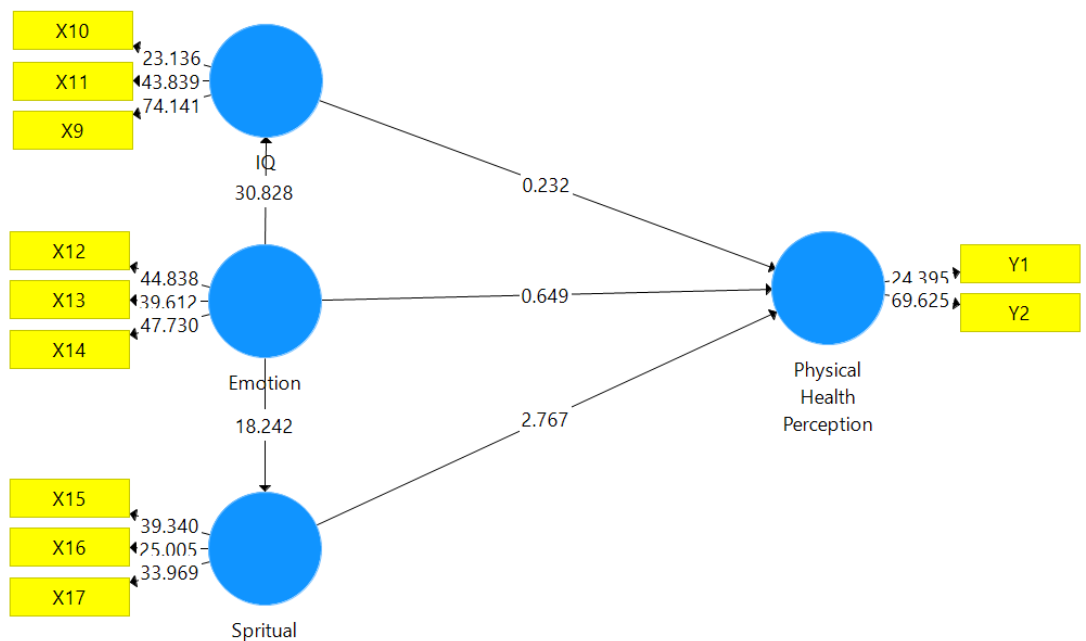
|   | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics ( O/STDEV ) | P Values |
|---|---------------------|-----------------|----------------------------|--------------------------|----------|
| Emotion -> IQ                             | 0,891               | 0,890           | 0,030                      | 29,912                   | 0,000    |
| Emotion -> Perception of Physical Health  | 0,191               | 0,195           | 0,274                      | 0,698                    | 0,486    |
| Emotion -> Spritual                       | 0,837               | 0,834           | 0,042                      | 20,165                   | 0,000    |
| IQ -> Perception of Physical Health       | 0,052               | 0,025           | 0,214                      | 0,244                    | 0,807    |
| Spritual -> Perception of Physical Health | 0,459               | 0,466           | 0,171                      | 2,688                    | 0,007    |

*Source: Data processed from SmartPLS 3.0 output*

Based on the results of Table 8 we see that the emotional variable has a significant effect on IQ (t-count > t-table) = 29.912 > 1.966707. The effect of emotion on IQ is 0.29912 (t=29.912), meaning that there is a positive and significant influence (p<0.05). The higher the emotion, the higher

the perception of IQ. The emotional variable has no significant effect on the perception of physical health ( $t\text{-count} < t\text{-table}$ ) =  $0.698 < 1.966707$ . The effect of emotions on the perception of physical health is 0.00698 ( $t= 0.698$ ), meaning that there is a negative and insignificant effect ( $p>0.05$ ). The lower the emotion, the lower the perception of physical health. Furthermore, the emotional variable has a significant effect on spirituality ( $t\text{-count} > t\text{-table}$ ) =  $20.165 > 1.966707$ . The influence of emotion on spirituality is 0.20165 ( $t=20.165$ ), meaning that there is a positive and significant influence ( $p<0.05$ ). The higher the emotion, the higher the spiritual.

The IQ variable has no significant effect on the perception of physical health ( $t\text{-count} < t\text{-table}$ ) =  $0.244 < 1.966707$ . The effect of IQ on the perception of physical health is 0.00244 ( $t=0.244$ ), meaning that there is a negative and insignificant effect ( $p>0.05$ ). The lower the IQ, the lower the perception of physical health. While, the spiritual variable has a significant effect on the perception of physical health ( $t\text{-count} > t\text{-table}$ ) =  $2.688 > 1.966707$ . The spiritual influence on the perception of physical health is 0.02688 ( $t=2.688$ ), meaning that there is a positive and significant influence ( $p<0.05$ ). The higher the spiritual, the higher the perception of physical health. Figure 2 shows the t-statistic values generated using SmartPLS version 3.



**Figure 2.** Bootstrapping output



## **4. DISCUSSION**

### **4.1. Effect of Emotions on IQ**

The results of this research analysis show that emotions have a positive and significant effect on IQ ( $p < 0.05$ ). This illustrates that the higher a person's emotion, the higher their IQ, particularly among those active in sports. While emotions are relatively new compared to IQ, research has indicated that emotional intelligence is just as important. Drigas & Papoutsis (2018) reported that emotions significantly affect IQ. This aligns with previous research, such as Fteiha & Awwad (2020), which found that emotions can buffer against negative life events, aiding in psychological adjustment and enhancing children's coping abilities by reducing stress and improving health, well-being, and performance. This view also supports more recent research that emphasizes the importance of emotional competence in relation to life adjustment and satisfaction (Parker et al., 2004)

### **4.2. The Influence of Emotions on Perceptions of Physical Health**

The analysis results indicate that emotions have a negative and insignificant effect on perceptions of physical health ( $p > 0.05$ ). This suggests that lower levels of emotion are associated with a lower perception of physical health among those active in sports. In this context, research on perceived emotional health has shown higher rates of subjective depression, reduced interest or pleasure in activities, and increased fatigue or low energy, particularly among women and individuals under 55. These findings are better than those reported in the literature, such as a study on quality of life and burnout among Spanish medical professionals, where burnout or depression rates were found to be 47% (Fernández Sánchez, Pérez Mármol, & Peralta Ramírez, 2017).

### **4.3. Emotional Influence on Spiritual**

The results of this research analysis show that emotions have a positive and significant influence on spirituality ( $p < 0.05$ ). This illustrates that the higher the emotion a person has, the higher the spiritual level of someone who actively exercises. Some literature explains that positive emotions experienced in any context have the capacity to broaden the scope of attention, build long-lasting personal resources, and eliminate the effects of negative emotions (Van Cappellen, Zhang and Fredrickson, 2023). In this section, we summarize research on the effects of positive emotions in relation to spirituality and the effects of perceived positive emotions. The first effect we describe is how positive emotions support one's beliefs. The other three effects we describe are the benefits that

positive emotions experience on health and well-being, prosocial intentions and behavior, and sustained engagement in the practice.

#### **4.4. Effect of IQ on Perceptions of Physical Health**

The results of the analysis of this study indicate that IQ has a negative and insignificant effect on the perception of physical health ( $p > 0.05$ ). This illustrates that the lower the emotion a person has, the lower the perception of the physical health of someone who actively exercises. The results of this study also support previous research which stated that IQ level affects the skills possessed by soccer athletes (Nakisa & Ghasemzadeh Rahbardar, 2021). The results of other studies show that there is a significant relationship between IQ and handball playing skills (Strykalenko et al., 2020). Based on these results, IQ needs to be a serious concern in the process of fostering soccer achievements. Analysis of the research data shows that there is a strong relationship between the level of physical fitness and the Intelligence Quotient (IQ) of the students of the Football Activity Unit at Jenderal Sudirman University. The results of this study indicate that good physical fitness will affect a good level of Intelligence Quotient (IQ). The combination of these two components will help students to achieve success in academic and non-academic aspects.

#### **4.5. Spiritual Influence on Perception of Physical Health**

The results of this research analysis indicate that spirituality has a positive and significant influence on perceptions of physical health ( $p < 0.05$ ). This illustrates that the higher a person's spiritual level, the higher the perception of the physical health of someone who is active in sports. In relation to the results of this study, other studies have reported that the type of education obtained is only related to spirituality, but not related to health behavior or psychological well-being. The connection is stronger in the human mind and spirit group. The type of education serves as a criterion for dividing students into classes based on different approaches to physical health and the human body or psychosocial health and the human mind and spirit, which in turn are expected to show differences in spirituality and health-related behavior. The relationship between the type of education and psychological well-being is not expected to be significant, because there is no assumption of differences in welfare levels between the groups (Van Cappellen, Zhang & Fredrickson, 2023).

## 5. CONCLUSIONS

Based on the study results, it can be concluded that emotions significantly influence IQ and spiritual intelligence. However, emotions and IQ do not significantly impact perceptions of physical health. In contrast, spirituality has a significant effect on improving the perception of physical health. Therefore, this research suggests that for sports participants aiming to enhance their health through physical activity, it is beneficial to incorporate emotional intelligence, IQ, and spirituality. Consequently, the selection of sports activities should consider these factors (emotions, IQ, and spirituality) to maximize their positive effects.

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#### **AUTHOR CONTRIBUTIONS**

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

#### **CONFLICTS OF INTEREST**

The authors declare no conflict of interest.

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