

# Review of Geographic Factors Support Mapping in Yogyakarta Related to Food Security Conditions on The Physiological Quality of Talented Athletes

Faidillah Kurniawan<sup>1</sup>

<sup>1</sup> Sport Coaching Education, Faculty of Sport Sciences, Universitas Negeri Yogyakarta

\*Corresponding author. Email: [faidillah\\_fencing@uny.ac.id](mailto:faidillah_fencing@uny.ac.id)

## ABSTRACT

The specific objective and target of this research is to analyze and explore through a review of the mapping of the relationship between geographical conditions and the physiological conditions of the community related to efforts to improve and develop achievement sports in Yogyakarta. Obtaining a study on the relevance of geographical conditions to the physiological conditions of the surrounding community towards efforts to improve and develop achievement sports. This research refers to the mix method research through an exploratory study pattern. Research Results and Discussion Related to the uniqueness of the Yogyakarta, it is undeniable that the need for food as a supporter of human growth can be fulfilled and fulfilled properly, considering the availability of agricultural land, plantations, fisheries which are very supportive. On the other hand, Yogyakarta with its tropical climate with relatively high humidity has the potential to develop outstanding athletes by considering the ideal distribution of hill/mountainous plains, mountain slopes, plains and coasts where areas with high humidity have many advantages for the development of sports such as sports, aerobics, an aerobics, games and self-defense. Physiologically, the average results of the entire series of biomotor tests on research samples in the "Medium" category were obtained. Regarding the age range of the research sample in the range of 15-16 years (teenage age) with the achievement of the biomotor quality portrait, it is still very possible to be optimized again in the future towards the golden age in achieving peak performance of potential athletes.

**Keywords:** *Geographical Conditions, Food Security, Sports Achievement, Physiological Factors*

## 1. INTRODUCTION

Sport is one of the potential activities that can elevate the degree of an area in terms of education, recreation and achievement. In relation to achievement sports, the achievement of sports achievements in a sport will be able to raise the degree of an area with the acquisition of its achievements. Talking about achievement, there are several influencing factors. According to Collins et al (2016) and Rees et al (2016) there are several factors that influence success in achieving achievement in sports, including: Characteristics of athletes, characteristics of training and characteristics of the social environment.

Referring to the reference of the study conducted in Papua, it can be used as a reference regarding the phenomena that exist in YOGYAKARTA. The Special Region of Yogyakarta (YOGYAKARTA) is an area

with a fairly unique and complete geographical character, this is because in YOGYAKARTA there are highlands (mountain slopes), sloping (urban) and coastal (coastal) areas. On the other hand, the phenomenon of geographical character causes the general climatic conditions in YOGYAKARTA with a fairly high level of humidity. In the explanation above, it has been conveyed that there is an influence of geographical conditions on body and emotional mechanisms so that it affects a person's special sports skills. On another observation, in the development of sports achievements, it is undeniable that it requires no small amount of money. Achievement sports under the guidance of KONI YOGYAKARTA are approximately 39 (thirty nine) sports, both individual and team sports. On the other hand, YOGYAKARTA is one of the provinces with an average per capita income per year, so it must be more observant in distributing the budget to all sports that are fostered. Based on this view, it is necessary to

study about sports that have the potential to be able to gain achievements so that they will be focused on future development and can further optimize the existing budget.

**2. METHODS**

This research refers to the mix method research method (mixed methods). This study will produce an output in the form of a review related to the geographical mapping of the YOGYAKARTA region in

the focus of the perspective of the physiological character of the community in an effort to develop superior sports achievements.

In this mixed method research, it refers to the mixed exploratory sequential design model, which is where the research begins with quantitative data collection and then continues with qualitative data collection (Creswell, 2011). The schematic description of the technical data collection and data analysis in this study can be seen in the image below.

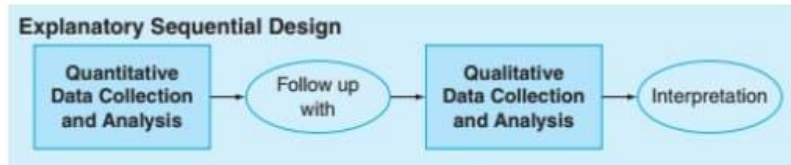


Figure 1. Schematic description in technical data collection and data analysis.

**3. RESULTS**

**3.1. YOGYAKARTA Geographical Conditions**



Figure 2. Map of YOGYAKARTA Administration, Source; Bappeda YOGYAKARTA, 2021

Geographically, the YOGYAKARTA region has several characteristics. First, in general, the soil conditions of YOGYAKARTA are fertile so that it is possible to plant various agricultural crops. However, each district/city has different natural potentials because the YOGYAKARTA region has a landscape consisting of mountains/hills, lowlands, and coastal areas. The area of YOGYAKARTA is 3,185.80 km<sup>2</sup> or 0.17% of the total area of Indonesia (1,860,359.67 km<sup>2</sup>) and is the province with the smallest area after the Special Capital Region (DKI) Jakarta. When viewed by district and city, the largest area in YOGYAKARTA is Gunungkidul Regency, which covers 46.63% of the area of YOGYAKARTA while the smallest area is Yogyakarta City, which is 1.02% (Yoeke Indra Agung Laksana: 2019, 11-12).

The following is a detail of the area of the Special Region of Yogyakarta in the table of the geographical situation of YOGYAKARTA.

Table 1. Geographical Situation of Yogyakarta

County/City	Geographical Circumstances			
	An area	Area Percentage	Altitude	Distance
	2020	2020	2020	2020
D.I. Yogyakarta	3.185.80	100	-	-
Kulonprogo	586.27	18.40	50	22
Bantul	506.85	15.91	45	12
Gunungkidul	1.485.36	46.63	185	30
Sleman	574.82	18.04	145	9
Yogyakarta	32.50	1.02	75	2

Source; BPS YOGYAKARTA (2020)

**3.1.1 Climatic Conditions in YOGYAKARTA**

As an area in a tropical climate, the climatic conditions in Yogyakarta are also influenced by the tropical climate which is hot, causing high rainfall. In addition, because it is very close to the Indonesian Ocean, there is a lot of evaporation of seawater into moist air and results in high rainfall.

Climatic parameters, such as rainfall, air temperature, air humidity and wind direction, greatly affect the potential for natural resource development, both seen as potential natural reserves and sustainable natural potential. In 2017, YOGYAKARTA was recorded as having: a). minimum air temperature of 21.3°C in August and maximum 31.9°C in May; b). the largest amount of monthly rainfall is 693 mm<sup>3</sup> in November and the lowest is 0 mm<sup>3</sup> in August; c). minimum air humidity 45.8% in August and maximum 97.1% in March d). air pressure between 1011.8 mb – 1015.7 mb; e), a minimum wind speed of 0.7 knots and a maximum of 1.1 knots (Source: BPS, YOGYAKARTA in Figures 2020).

The following are the details of observations of climate elements from the BMKG of the Special Region of Yogyakarta in the table below.

**Table 2.** Observations of climate elements from BMKG Yogyakarta

Climate Element	BMKG Station	Minimum	Average	Maximum
(1)	(2)	(3)	(4)	(5)
Suhu/Temperature	STAKLIM Yogyakarta, Sleman, YOGYAKARTA, Latitude: 07° 43' 52.2" LS, Longitude: 110° 21' 13.3" BT, Height: 182 m	23,00	26,26	28,90
Kelembaban/Humidity		54,00	78,75	92,00
Kecepatan Angin (m/det)/Wind Velocity (m/sec)		1,00	4,20	7,00
Tekanan Udara/Atmospheric Pressure (mb)		988,20	992,50	997,00

Source; BPS YOGYAKARTA (2020)

### 3.1.2 Residential Conditions in YOGYAKARTA

**Table 3.** Population Growth Rate in YOGYAKARTA

Regency/ Municipality	Population (thousand)			Annual Population Growth Rate (%)		Percentage of Total Population		Population Density per sq.km		Population Sex Ratio	
	2000	2010	2020	2000-2010 <sup>3</sup>	2010-2020 <sup>3</sup>	2010 <sup>2</sup>	2020 <sup>3</sup>	2010 <sup>2</sup>	2020 <sup>3</sup>	2010 <sup>2</sup>	2020 <sup>3</sup>
(1)	(2)	(3)	(4)	(7)	(8)	(7)	(8)	(9)	(10)	(9)	(10)
Kulon Progo	370944	388869	430220	0.48	1.13	11.25	11.20	663.00	733.83	96.23	97.18
Bantul	781013	911503	1018402	1.56	1.24	23.36	26.50	1798.00	2009.28	99.45	98.22
Gunungkidul	670433	675382	742731	0.07	1.06	19.53	19.33	455.00	500.03	93.70	93.36
Sleman	901377	1093110	1219640	1.94	1.22	31.62	31.74	1902.00	2121.78	100.49	101.88
Yogyakarta	396711	388627	431939	-0.21	1.18	11.24	11.24	11958.00	13290.43	94.81	95.45
<b>D.I. Yogyakarta</b>	<b>3120478</b>	<b>3457491</b>	<b>3842932</b>	<b>1.03</b>	<b>1.18</b>	<b>100.00</b>	<b>100.00</b>	<b>1085.00</b>	<b>1206.27</b>	<b>97.73</b>	<b>97.97</b>

Source; BPS YOGYAKARTA (2020)

### 3.1.3 Condition of Area and Number of Islands by Regency City in Yogyakarta

**Table 4.** Observation of Area and Number of Islands in YOGYAKARTA

Regency/Municipality	Capital of Regency/Municipality	Total Area <sub>1</sub> (km <sup>2</sup> /sq.km)	Percentage to Province's Area	Number of Island <sup>2</sup>	Altitude (ma.s.l)	Distance to the Capital
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kulon Progo	Wates	586.28	18.71	1	0 - 965	30
Bantul	Bantul	508.13	16.22	1	45.00	12.00
Gunungkidul	Wonosari	1,431.42	45.69	1	185.00	39.00
Sleman	Sleman	574.82	18.35	1	32.93	16.00
Yogyakarta	Yogyakarta	32.50	1.04	1	114.00	-
<b>D.I. Yogyakarta</b>		<b>3,133.15</b>	<b>100.00</b>			

Source; National Land Agency D.I. Yogyakarta (2020)

## 3.2. Condition of Food Security/Sufficiency in YOGYAKARTA

It should be from the mapping of the existing geographical conditions will certainly affect the quality of its natural resources (SDA). In this study, in terms of how the geographical area is able to supply food availability related to the adequacy of nutritional quality in the surrounding community. This nutritional adequacy can be a reflection that an area has quality food security for its people in the form of agricultural, plantation, livestock and fishery products (land (ponds, etc.), rivers and seas) along with the quality of their distribution in the region. Physiological quality related to biomotor elements or physical components is also influenced by the quality of nutrition that enters (intake) to the surrounding community, in this case the observation of the research team related to food security in the province of YOGYAKARTA.

The detailed description of food adequacy/security in the province of YOGYAKARTA as a whole can be described in the following table below.

**Table 5.** Food Security Index (IKP) in YOGYAKARTA

No.	County/City	IKP
1.	Sleman	82,30
2.	Yogyakarta	80,68
3.	Gunung Kidul	80,32
4.	Kulon Progo	80,31
5.	Bantul	79,73
<b>YOGYAKARTA Province (ranked 4th National best)</b>		<b>80,67</b>

Source; Food Security Agency of the Indonesian Ministry of Agriculture (2020)

In more detail, the description of the Food Security Index (IKP) level can be interpreted from the results of mapping and grouping carried out by the Food Security Agency of the Indonesian Ministry of Agriculture

(2020). The following is a more detailed description of the results of mapping the provinces in Indonesia with

the quality of the Food Security Index (IKP) and their distribution to other provinces in Indonesia.



**Figure 3.** Map of the 2020 Provincial Food Security Index (Source; Food Security Agency of the Indonesian Ministry of Agriculture (2020))

**3.3. Physiological Condition of Talented Athlete Candidates in YOGYAKARTA**

In this study, the focus of observation of the research team regarding physiological conditions is the biomotor element, especially the observation of physical conditions with the subject of prospective talented athletes who are members of the screening of talented sports students with an age range of 15-16 years with a total research subject from the Regency and City. in YOGYAKARTA (Sleman Regency, Bantul, Kulon Progo, Gunung Kidul and Jogjakarta City) as many as 415 people.

The biomotor components or physical elements that become the benchmark of observation in this study are the basic physical components in general with the following description; components of flexibility, strength, balance, speed, and power. The description of the results of measuring physiological conditions related to biomotor components, especially physical observation in gifted students with an age range of 15-16 years, below will be displayed in the form of the results of the assessment of the results of the overall physical ability test series based on the conversion classification of the assessment of the entire series of test results in the form of norms with a distribution norms Very Good, Good, Medium, Poor, Very Less (Harsuki: 2003).

**Table 6.** Physical test results of research subjects Overall

No.	Item	Range Min.	Range Max.	Range Average	Categori
1.	Flexibility	28	49	38,53968	Medium
2.	Vertical Jump	19	41	48,37574	Good
3.	Wall Seat	10	45,8	37,9272	Medium
4.	Sit – Up	4	49	31,7971	Medium
5.	Push – Up	5	48	26,85507	Medium
6.	Balance	4	49,8	42,38462	Good
7.	Speed	2	42	30	Medium

**4. DISCUSSION**

**4.1. Mapping Analysis Related to Geographical Conditions**

The geographical characteristics of the Special Region of Yogyakarta are unique, with an area of 3,120 m2 being a provincial-level area after Bali and DKI but having 3.6 million inhabitants divided into four regencies and one city with 78 sub-districts and 438 villages/kelurahan (KGPAA Paku Alam X: 2018 ). Geographically, the YOGYAKARTA area is classified as fertile with different natural potentials in each district/city, natural conditions are a source of tourism potential, the potential for marine resources in the coastal areas of YOGYAKARTA which is directly adjacent to the Indian Ocean, rivers crossing YOGYAKARTA have the potential to support regional development. , and the development of land use in YOGYAKARTA.

Related to the uniqueness of the YOGYAKARTA Province, it is undeniable that the need for food as a supporter of the quality of human resources can be fulfilled and fulfilled properly, considering the availability of agricultural land, plantations, fisheries which are very supportive. On the other hand, YOGYAKARTA Province with its tropical climate with relatively high humidity has the potential to develop

outstanding athletes by considering the ideal distribution of hill/mountainous plains, mountain slopes, plains and coasts where areas with high humidity have many advantages for the development of sports such as sports. aerobics, an aerobics, games and self-defense.

#### **4.2. Mapping Analysis Related to Physiological Conditions**

Perissinotto in Milanovic et al (2011) states that physiological and nutritional characteristics are related to external environmental conditions (geographical areas) to the optimization of human physiological qualities within itself. This is evidenced by the results of measurements of biomotor components related to the physical elements of the research subjects depicting that most of the achievements in the biomotor quality category are at the "medium" level, approaching to good. On the other hand, the conversion standard for the assessment of the results of a series of physical ability tests referred to by Harsuki (2003) is a standardized assessment for national training athletes.

### **5. CONCLUSION**

Broadly speaking, when traced from the results of research and discussion that have been raised, it can be concluded that a review of mapping support for geographical factors in the YOGYAKARTA region related to physiological elements in the perspective of leading sports is very possible. This can be interpreted from the favorable geographical conditions and the results of the study from a physiological point of view, especially the ideal basic biomotor/physical components of talented athletes (regardless of the specific characteristics of the sport) who are capable.

However, this will be even more perfect if synergies are established in other supporting aspects in order to achieve maximum training goals in order to achieve maximum performance as well.

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