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Analysing Different Bikes as per Different User

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ABSTRACT:

The present study was conducted to analyse different bikes height as per different users. For the study, five users of different height were selected with height 5'4, 5'6, 5'8, 5'10 and 6 respectively and Five bikes were taken royal enfield, pulsar, hf deluxe, splendor, discover. In modern era of transport, motor bikes play an important role, and very little work is done over customization of rider's postures. Mainly anthropometric dimensions play a major role to study the different bike height as per different users. Through questionnaire and test ride data is collected and studied. Dimensions of different bikes are taken for analysing bike height as per different users.

Introduction:

Motorbikes are the largest sold automobiles all over the world. If our country alone is considered over 8 million two wheelers are sold every year. Even though they contribute to such a great extent to the automotive market, comfort on the bikes is less attended topic than four wheelers. Very little work done over customization of rider's posture. Present study proposes for development of a test ride for identifying ergonomic riding postures. The comfortable posture can be obtained with adjustment provided for handle grip and footrest. The ranges can be identified with the data obtained from human and bike anthropometric dimensions.

Bicycle modeling and control were also discussed. These models include: derivatives or simplifications of Whipple's bicycle dynamics model in which the lateral motion constraints at the road contact are nonholonomic, requiring special techniques to form correct equations of motion; and the Timoshenko-Young model in which the steer angle and speed completely determine the lateral motion of the base point of an inverted pendulum that represents the vehicle's roll dynamics **(D.J.N. Limebeer).** study in dynamics and rider control of bicycles. The first part gives a brief overview of the modelling of the dynamics of bicycles and the experimental validation. The second part focuses on a review of modelling and measuring human rider control, together with the concepts of handling and manoeuvrability and their experimental validation. The paper concludes with the open ends and promising directions for future work in the field of handling and control of bicycles **(A. L. Schwab).** The bicycle is almost unique among human-powered machines in that it uses human muscles in a near-optimum way. The scientific and engineering information is of interest not only to designers and builders of bicycles and other human-powered vehicles but also to competitive cyclists, bicycle commuters, and recreational cyclists **(David Gordon Wilson).** Ergonomics deals with the comfort associated with the interaction between the user and the system. Motorcycles present a very interesting problem of a constrained work station where there is very less scope for adjustment of postures **(Kolekar Snehal B).** To overcome problems associated with the wrong posture, we must find out what is appropriate and comfortable riding posture. Posture of a rider is prominently governed by position of hand grip, seat and footrests **(Dr. Rajhans N.R.).** Postures of a rider is prominently governed by position of hand grip and footrest keeping seat as reference. Present study concentrates on analysing different bikes height as per different users.Steering a motorcycle or bicycle is counterintuitive; to turn right, you must steer left initially, and vice versa. You can execute this initially counter-directed turn by turning the handlebars explicitly (called counter-steering) or by throwing your hips to the side **(J. Fajans).**

OBJECTIVE:

- To study dimensions of different types of bikes .
- To find out which bike dimension is more suitable according to anthropometry of user.

TECHNICAL PROGRAMME OF WORK:

- **Locale of study:** The study was conducted in achina village of dadri district in Haryana state.
- **Selection of sample:** The sample of study include 5 boys of different height(5'4, 5'6, 5'8, 5'10, 6).
- **Methodology :** researcher designed an experiment on 5 different types of bike that are royal enfield, pulsar, splendour, hf deluxe, discover. This experiment was done on 5 boys of different height, in which each boy has to use each bike for 20 minutes and analysed. After analysing recordings were made in term of questionnaire.

DATA COLLECTION (QUESTIONNAIRE):

Name					
Age					
Height					
Type of bike :	Royal enfield	Pulsar	Hf deluxe	Splendor	Discover
How will you rate the body style and design of bike :					
Which bike you feel more comfortable:					

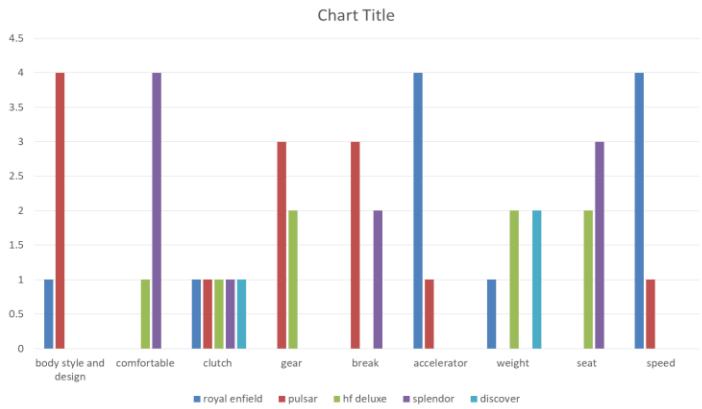
- Which bike features you like the most:

Bike	Clutch	Gear	Break	Accelerator	Weight	Seat	Speed
Royal enfield							
Pulsar							
Hf deluxe							
Splendor							
Discover							

Standard dimensions of different bikes :

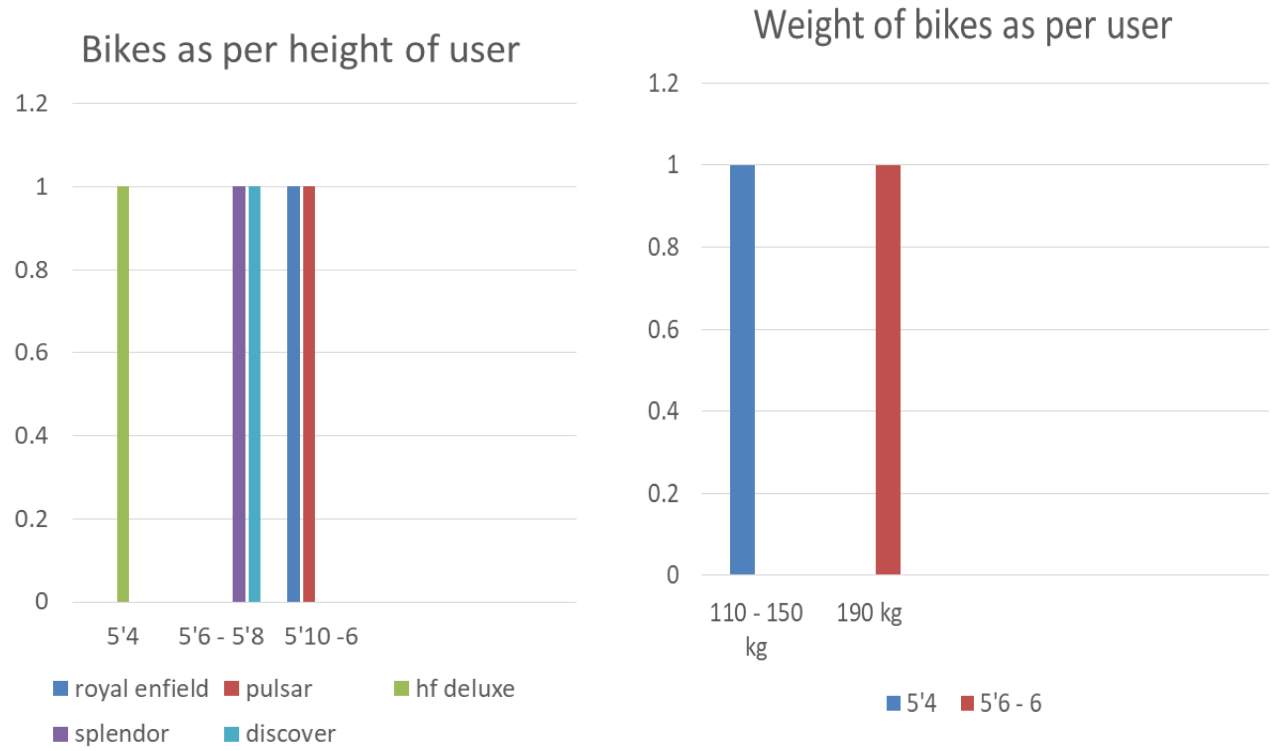
Bikes	**Dimensions(L× B× H)**	**Average weight**
Royal enfield	2140mm×800mm×1030mm	195 kg
Pulsar	2055mm× 755mm× 1170mm	150kg
Hf deluxe	1965mm ×720mm× 1045mm	110kg
Splendor	2000mm ×720mm× 1052mm	112kg
Discover	2035mm× 760mm ×2`1087mm	114kg

Result:



According to their choice all bikes clutch are suitable for them. As per study carry out of the choice of various person bike pulsar is like most as per body style and design. splendor bike is more comfortable in comparison of other bikes. 60% like gear of pulsar bike and 40% like hf deluxe as per their suitability. 60% like break of pulsar bike and 40% like splendor as per their suitability. 80% like accelerator of royal Enfield bike and 20 like accelerator of pulsar bike. 40% like weight of hf deluxe bike and 40 like weight of discover, 20 %like weight of royal Enfield. 60% like seat of splendour bike and 40 %like seat of hg deluxe. 80% like speed of royal Enfield bike and 20 %like speed of pulsar bike.

Findings:



As per results the average weight of bike i.e. suitable for person is between 110-150kg. Except some heavy bike which carrying weight 190kg are suitable for a person having average height 5'6-5'10. According to parameters (gear, break) – pulsar bike is suitable and parameters (speed, accelerator)- royal Enfield bike is suitable. Person having 5'4 height hf deluxe and person having 5'6-5'8 height discover and splendor, for 5'10-6 height royal Enfield and pulsar is suitable.

Conclusion:

On the above study of dimensions of different type of bike we conclude that people prefer more bikes that between 112-150 kg which are suitable for them and in bike dimensions suitability of anthropometry regular dimensions of 2055mm ×755mm× 1170mm to 2000mm ×720mm ×1052mm are suitable. Person with height 5'4 prefer hf deluxe as per suitability because as her height is short he is not comfortable to drive other bikes and 5'10-6 height person is comfortable to drive all the bikes because of her height.

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