In this modern era, development of bicycles are based on condition that will be faced, regional and special purpose (eg for sports, and other innovations). In general speaking bicycle is divided into three types, namely mountain bike, sporty bike, charpy bike. The most influential differences of the three types of bicycles can be seen from the STA (seat tube angle) that affect riders sitting position. Based on these and previous studies also stated that the STA is the main factor to determine the level of injury risk, and the amount of energy needed by cyclists. It is necessary to do research for analyzing the effect of STA on the pedal and the energy value of the injury risk for three types of bicycles.

As an initial study, a research is carried out simulations on three types of bicycle RULA with certain variations of the STA to determine the level of risk of injury to the rider's body. While to know the amount of energy for cycling, cycling experiments are carried out by five men drivers (respondents) on three types of bicycle racing bicycles, mountain bicycles, and bicycles are relaxed. Cycling
energy data are calculated based on the pulse and oxygen required during cycling, then performed a statistical test with ANOVA. As a verification of the energy needs, an energy calculation is done with biomechanics method.

From the analysis RULA method and cycling experimental is known that the most optimal STA for sporty bicycle type is 76 °. For mountain bike type, STA optimal amounts to 69 °. And for charpy bike type, STA optimal is 64 °.

Key word: Bicycle; Seat Tube Angle (STA); cycling energy; injury risk value; RULA; biomechanic.