During lane changing, the speed of the vehicle is related to the stability of the vehicle. If the driver changes the lane at a high speed, the vehicle will lose its stability and it can increase the possibility of an accident. In this study, the experiment has been developed to analyse how the speed of the vehicle can affect the vehicle dynamics behavior. To achieve this objective, the UMP Test Car which employed with global positioning system (GPS), steering torque and angle sensor, displacement sensor and gyro sensor is used in the experiment. The experiment is run at the UMP test track and the track has 2 lanes which can allows the vehicle to change the position from the left to the right. In the experiment, when the GPS monitor shows 30 km/h, the driver will maintain the speed and start to turn the steering just after the test car reaches to the first skittle. Then, the driver will turn again the steering when the test car reaches to the second skittle. This method is repeated two times and the same methods is used for the speed 50 km/h. The data from the sensors is recorded in the Dewetron software and the graph is plotted. From the experimental results, the steering angle, steering torque, yaw rate and displacement for the speed 30 km/h is smaller than 50 km/h. It means that during lane changing, the speed 30 km/h is more stable compared with 50 km/h