ABSTRACT

Blood Doping is the practice of boosting the no. of Red Blood Cells in the bloodstream in order to enhance athletic performance. Because such blood cells carry oxygen from the lungs to the muscles, a higher concentration in the blood can improve an athlete’s aerobic capacity (VO2 max) and endurance. The project detects the misuse of certain techniques and/or substances to increase one’s red blood cell mass, which allows the body to transport more oxygen to muscles and therefore increase stamina using Field-Programmable gate Array.

INTRODUCTION

Blood doping is defined as the use of illicit products i.e. erythropoietin (EPO), darbepoietin-alfa, hypoxia-inducible factor (HIF) stimulators and methods in order to enhance the O2 transport of the body to the muscles. The body undergoes aerobic respiration in order to provide sufficient delivery of O2 to the exercising skeletal muscles. The maximum O2 uptake depends on cardiac output, O2 extraction and hemoglobin mass.

The cardiac output of an athlete is difficult to manipulate as the distribution of cardiac rate (80%) is at the maximum during competitions. In addition, O2 (90%) extraction is at maximum when exercising. Therefore, only way to enhance once physical performance is to increase the 12 content in the artery by enhancing the hemoglobin mass.

METHODS OF BLOOD DOPING

The three widely used types of blood doping are

• Blood transfusions
• Injections of erythropoietin (EPO)
• Injections of synthetic oxygen carriers

K-MAPS

F = ABC+ABD+ABE+ACD+ACE+ADE+BCD+BCE+BDE+CDE

CONCLUSION

We can conclude that logic can be designed for any real life problem and implemented using the FPGA board. As per our prototype design, using the expression, we could design four Outputs for detecting the doped cells from blood.