CWSF 2020 - ,

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Human Fibrocartilage Transplantation for Articular Cartilage Defects

Challenge: Health
Category: Senior
Region: East Kootenay
City: Cranbrook, BC
School: Mount Baker Secondary

Abstract: Osteochondral defects (OCD) refers to a focal area of damage over the surface of an articular joint resulting in the loss of cartilage and bone. This is the result of acute trauma or an underlying bone disorder. This creates a painful joint. Multiple surgical techniques have been attempted to deal with the pain. This includes microfracturing techniques, osteoarticular transfer systems (OATS procedure) and unloading osteotomies. Unfortunately the results have not been shown to be effective. This ultimately leads to total joint replacement and possibly amputation. OCD tends to occur in younger patients and result in a lifetime of pain and dysfunction. Fibrocartilage is a dynamic tissue found at the insertions of ligaments and tendons. It contains cartilage ground substance and chondrocytes. Fibrocartilage is unique as it has a high propensity to reattach to its insertion site if it is surgically repaired.

Biography

I am excited to return to CWSF for the second time. This is particularly special as my younger brother is joining me at CWSF. I am currently attending Mount Baker Secondary School in grade 10. I am an avid soccer player and a member of the Caps to College (pre-Collegiate) Whitecaps soccer program. I also play for the U18 regional rep soccer team. My other passions include SCUBA diving, surfing, kitesurfing and snowboarding. My research project was inspired by the global need to improve the function of arthritic joints and to decrease their associated pain. Arthritis is the leading cause of disability in adults in North America. My project is now in its second year of development. Long-term outcomes were collected this year with the plan in the future to determine the biologic mechanism causing the favourable results demonstrated in my study. My best advice for future science fair students is to come up with an idea that you can imagine that would be enjoyable to study and test. This way, the hard work and long hours will not seem so hard or long.