Individuals with type 1 diabetes (T1DM) are often less active than peers with other chronic diseases. Among children with T1DM, lower activity levels correlate with poorer fitness levels, worse glycemic control, and weight difficulty. In children with T1DM, increased physical activity lowers A1C by 0.3 to 0.5 points. Reducing sedentary time improved metabolic control in this population. Different forms of exercise have varying effects on glycemia. Continuous glucose monitors (CGM) allow for direct monitoring of glucose levels. Insulin pumps allow for a continuous flow of rapid acting insulin underneath the skin, and often integrate with CGM. Children participating in sports and exercise need to ensure their blood glucose levels maintain at a safe level. A combination of these technologies allows for this to be managed when hiking in Yellowstone or exploring the Grand Canyon.

**Methods and Materials**

Literature review conducted utilizing PubMed, Google Scholar, Cochrane Library, and Medline with keywords diabetes, hiking, and insulin pump resulted in two articles, but neither were exact matches. Five insulin pump brands sold in the United States were researched on the manufacturer websites, including Medtronic 780G, Tandem T-Slim Control IQ, Omnipod S, Beta Bonics ILET, and Dana Diabecare ISS. The ease of use, cost, size, battery life, and special features are the areas that allow the most flexibility when using insulin pumps.

**Results**

After comparing the insulin pumps, the pump that resulted to be the most effective and efficient for backcountry hiking was the Medtronic 780G. The Medtronic 780G has the most basal increments, maximum basal rate, and a large insulin reservoir. The pump uses AA batteries that can last 1 week. The system uses a hybrid loop system and is compatible with the Medtronic Extended Infusion Set for a 7 day wear. The pump can link to caregiver phones to access the information, and the pump has an exercise set to automatically change a person’s glucose target, as exercise changes the demand requirement for the body. The pump is waterproof at 12 feet for 24 hours. The limitations include a complex menu and hard buttons. Normal AA batteries do not function well in the cold, but specific batteries such as Energizer Ultimate Lithium batteries last to 40 degrees Celsius as well as NMH AA batteries. The Tandem T-Slim Control IQ is small and lightweight, but does not have a phone application and needs to be charged. While Omnipod does not require tubing, it does not directly link to CGM.

**Discussion**

Five insulin pumps were researched and evaluated for ease of use, physical size, battery life, and special features to help providers determine which insulin pump would be most effective, practical, and efficient for patients with type 1 diabetes. As providers, understanding the patient’s goal is important in determining which insulin pump is most appropriate. For children going hiking or backpacking, the Medtronic 780G would be the most effective in monitoring blood glucose levels, as parents could monitor if not physically with the child. If a patient does not have a smartphone, the Tandem T-Slim Control IQ may be the best option, as the controls are on the pump itself. Knowing the advantages and limitations of these brands and aligning with the patient’s needs will help guide a patient to the pump most suitable for them.

**Conclusions**

As providers, understanding the patient’s goal is important in determining which insulin pump is most appropriate. For children going hiking or backpacking, the Medtronic 780G would be the most effective in monitoring blood glucose levels, as parents could monitor if not physically with the child. If a patient does not have a smartphone, the Tandem T-Slim Control IQ may be the best option, as the controls are on the pump itself. Knowing the advantages and limitations of these brands and aligning with the patient’s needs will help guide a patient to the pump most suitable for them.