An Empirical Evaluation of Textiles for Reusable Menstrual Pads

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During a menstruating person's lifetime, over 11,000 disposable menstrual products and their packaging are sent to landfills. Recent advances in textiles have made reusable fabric menstrual pads a viable substitute for disposable menstrual pads, but there has been little published research on the effectiveness of reusable pads. The purpose of this project is to evaluate the wicking, absorption, and waterproofing abilities of different types of textiles to find a combination well-suited for a reusable three-layer menstrual pad. I tested 17 fabrics, a cotton fabric control and four selected from those that made each of the following claims: wicking, absorption, waterproofing, and two-in-one (claims to do both absorption and waterproofing). I conducted tests to measure wicking (outward wicking and downward wicking), absorption (maximum absorption and retention), and waterproofing of four 10-cm square samples of each fabric. I completed two rounds of testing with the fabric squares before doing a third round with two types of three-layer fabric menstrual pads composed of the fabrics in each category that performed best in my tests and a less expensive runner up combination. I tested these pads against a disposable pad (Stayfree regular maxi pad). I repeated the experiment after washing the pads 12 times, simulating about a year of use. I found that both before and after washing, the fabric pads performed equally in waterproofing, similarly in absorption, but worse in wicking compared to the disposable pad. Washing 12 times reduced absorbancy by about 10% and wicking by about 20%. Assuming reusable pads can be used for at least one year, a menstruating person can save about 40 to 65% by using reusable rather than disposable pads.