

An (2016) considered the effects of gloves on

[Design](#)



An inability to detect a pulse is the most common reported reason for not donning gloves. A study by Mylon et al. (2016) considered the effects of gloves on pulse detection using a design whereby water is pumped through one offive tubes under a layer of neoprene sponge using a peristaltic pump. They found significant differences in ability to feel the ' pulse' in gloved and ungloved conditions. The authors note that this cannot accurately simulate a pulse test due to the pump limitations on the speed and pressure. Also, there was the potential for bias due to the inability to vary the pulse location. Using a pump to get to the same pressure and speed of blood would be more simulative of the real world. Overall, most of studies go to show that tactile sensitivity is reduced when gloves are worn, but the extent to which this becomes a detriment to a patient is unknown. 1.

Dexterity Dexterity is defined as the ability to carry out tasks using motor skill, moving the hands, fingers and arms. The conformity of bending of the hands and fingers, material folding, and thickness are the main areas affecting dexterity, (Dianat et al., 2012). Together these can affect the ability of surgeons to carry out tasks and manipulate objects with fine skill.

Numerous dexterity tests have been developed, as shown in Table 2.

Widely used in these studies, are the Purdue Pegboard and the Crawford Small Parts Dexterity Test (CSPDT). Described by (Tiffin and Asher 1948) the Purdue pegboard test is designed to assess how many pegs can be placed into a board in the time set using both hands and each hand separately.

Washers can also be placed on the pegs in the test to allow further assessments. The CSPDT test requires the placement of the pins with the use

of tweezers, assessing finer dexterity. The results generally show that dexterity is affected when thicker or double gloves are worn (Moore et al., 1995; Chen et al., 1998; Pourmoghani, 2004; Sawyer and Bennet, 2006 Gnanaswaran et al.

, 2008; Berger et al., 2009; Drabek et al., 2009; Fry et al., 2010; Johnson et al., 2013; Mylon et al., 2016 and Park et al., 2016). Although not much of a difference is observed. vinyl shows more of a decrease in dexterity whilst latex shows minimal. Francis et al. (2001) and Hamstra and Dubrowski (2005) demonstrates the varied skill of professionals is a factor. They found students has less dexterity and dropped more pins than experienced surgeons.

Gauvin et al. (2006) states that these tests are of a good enough sensitivity to measure performance difference and discriminate between gloves. However, there are numerous issues with these tests. The primary issue being that the friction of each person's hand is different in the 'no gloves' variable due to sweat and oils on the fingers.

No mention of washing the pegs or hands is present in any of the literature. Many of these studies include the NHS first choice gloves: nitrile and latex as well as gloves that are not commonly used such as butyl and Vinyl (Pratt et al., 2007).