The incidence of hematologic cancers, such as multiple myeloma and leukemia, are increasing, and patients with these cancers are usually treated with systemic chemotherapy (Turkish Society of Hematology Publications, 2011). Although nurses carefully administer chemotherapy, the prevention of all complications, including the extravasation of chemotherapy into the peripheral tissues, is not always possible (Fidalgo et al., 2012; Schulmeister, 2010; WOSCAN Cancer Nursing and Pharmacy Group, 2009). Peripheral IV catheter (PIVC) application, duration, and type of treatment are the major factors that are effective in the success of peripheral IV chemotherapy administration (Centre for Healthcare Related Infection Surveillance and Prevention and Tuberculosis Control, 2013; Fidalgo et al., 2012; Infusion Nurses Society, 2011); however, blood flow at the administration site also is of great importance (Dural, 2008; Türker and Kayaalp, 2002). IV administered chemotherapy drugs rapidly enter the circulation, followed by dilution on distribution to the systemic plasma (Dural, 2008; Sützer, 2008; Türker & Kayaalp, 2002). Complication risks, such as extravasation in the tissues, increase if dilution of the drug is delayed, particularly in the smaller veins of the arms with slower blood flow (Dural, 2008). In the current study, the effects of isometric hand grip exercises were evaluated to test the hypothesis that an increase in the blood flow velocity would result in faster successful insertion of PIVCs and fewer complications, such as extravasation in the peripheral tissues.

To prevent complications and maintain effective drug delivery, venodilation (e.g., tourniquet application, regional hot application) and veno-constriction (e.g., hand grip exercises) methods have been used to increase the blood flow in the peripheral veins (Ay, 2007; Beer, 2002; Fink et al., 2009; Infusion Nurses Society, 2011; Khawaja, Williams, & Weaver, 1991; Lenhardt, Seybold, Kimberger, Stoiiser, & Sessler, 2002;