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In this talk we consider the up-down coloring of a knot diagram which is a kind of generalized warping degree labeling. We define a coloring function over up-down colored knot diagrams which is preserved under Reidemeister moves except at type II. By using the function, we show that for any virtual knot diagram  $D$ , there is a diagram  $D'$  representing the same virtual knot such that any sequence of generalized Reidemeister moves between  $D$  and  $D'$  must contain a Reidemeister move of type II. (Received September 19, 2015)