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 Riedemeister move of type II. (Received September 19, 2015)