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FINDING COMMON FIXED POINTS OF NONEXPANSIVE MAPPINGS BY ITERATION: CORRIGENDUM

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In [3] the following theorem was stated.

THEOREM 1. *Let X be a uniformly convex Banach space, C a closed convex subset of X, $T_1, T_2, \dots, T_k$ a family of nonexpansive selfmaps of C with nonempty common fixed point set. Then $\{x_n\}$, defined by*

$$x_0 \in C, \ x_{n+1} = (1-\alpha)x_n + \alpha T_k x_n, \ n \geqslant 0, \ 0 < \alpha < 1,$$

where

$$\begin{aligned} U_1 &:= (1-\alpha)I + \alpha T_1 U_0, \ U_0 = I, \\ U_2 &:= (1-\alpha)I + \alpha T_2 U_1, \\ &\dots \\ U_k &:= (1-\alpha)I + \alpha T_k U_{k-1} \end{aligned}$$

converges weakly to a common fixed point of the family.

However, the theorem was actually proved only for semicontractive maps, because a portion of the proof relied on [**1**, Theorem 3] (stated as [**3**, Lemma 2]). Using an improvement of that result, [**2**, Theorem 8.4], enables one to prove the Theorem of [3] as stated. For completeness we state this result of Browder.

LEMMA 1. *Let X be a uniformly convex Banach space, G a bounded closed convex subset of X, U a nonexpansive map of $G \to X$. Then*

(a) *If $\{u_j\}$ is a weakly convergent sequence in G with weak limit u_0 and if $(I-U)u_j$ converges strongly to an element w in X, then*

$$(I-U)u_0 = w.$$

(b) *$(I-U)(G)$ is a closed subset of X.*

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References

[1] F.E. Browder, 'Some contractive and semiaccretive nonlinear mappings in Banach spaces', *Bull. Amer. Math. Soc.* **74** (1968), 660–665.

[2] F.E. Browder, 'Nonlinear operators and nonlinear equations of evolution in Banach spaces', in *Nonlinear functional analysis*, Proc. Symposium Pure Math. **18** (Amer. Math. Soc, Providence, R.I., 1976), **pp.** 1–308.

[3] B.E. Rhoades, 'Finding common fixed points of nonexpansive mappings by iteration', *Bull. Austral. Math. Soc.* **62** (2000), 307–310.

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