Answer: With pdf $g'(s_j) = \frac{1}{2}\exp(-|s_j|)$ we get

$$l(W) = \sum_{i=1}^{n}\left(\log|W| + \sum_{j=1}^{d} -\log 2 - |w_j^T x_i|\right)$$

So then taking ∇_W of the log likelihood to maximise it, noting that $\nabla_{W_{ab}} \sum_{j=1}^{d} |w_j^T x_i| = \text{sign}(w_a^T x^{(i)}) x_b^{(i)}$ we get

$$\nabla_W l(W) = \sum_{i=1}^{n}\left(\frac{1}{|W|}\text{adj}(W)^T - \text{sign}(Wx_i)x_i^T\right)$$

giving us stochastic update rule

$$W := W + \alpha(W^{-T} - \text{sign}(Wx_i)x_i^T)$$