**Video Legends**

**Video S1:** In control group, the SCI rat’s locomotor function of right hind limb has not recovered and still paralyzed after 28 days.

**Video S2:** In DPSC sheet group, the rat’s right hind limb can assist in forward walking after 28 days.

**Video S3:** In DPSC dECM group, the rat’s right hind limb can stand and walk almost nearly after 28 days.