

Table S1 Study characteristics of cited studies

Author of study	Study type	Animal model	Scientific purpose	Modelled intervention	Accordance with national or European animal protection acts
Fried GM <i>et al.</i> , 2004 (3)	Theoretical (method development)	Pig	Skills training	Simulator for operations	+
Simforoosh N <i>et al.</i> , 2011 (5)	Theoretical (method development)	Dog, rabbit	Skills training	Laparoscopic skills	+
Sood A <i>et al.</i> , 2016 (6)	Theoretical (method development)	Pig	Technological testing	Robotic operation	+
Wottawa CR <i>et al.</i> , 2016 (7)	Theoretical (method development)	Pig	Technological testing	Robotic operation	+
Zijlmans M <i>et al.</i> , 2012 (8)	Theoretical (method development)	Pig	Technological testing	Navigation in operation	+
Engel DR <i>et al.</i> , 2010 (23)	Experimental	Mouse	Basic and applied science	Cytokine release after bowel manipulation	+
Jurczok A <i>et al.</i> , 2007 (25)	Experimental	Mouse	Basic and applied science	Inhibition of tumor implantation after laparoscopy	+
Moehrlen U <i>et al.</i> , 2005 (26)	Experimental	Mouse	Basic and applied science	Modulation of immune response after laparoscopy	+
Sanders J <i>et al.</i> , 2014 (28)	Experimental	Rat	Applied science	Genetic studies (comparative genome analyses in humans and rats)	+
Lingohr P <i>et al.</i> , 2014 (29)	Experimental	Rat	Basic and applied science	Laparoscopic coecum resection in rats mimicing appendectomy in humans	+
Lingohr P <i>et al.</i> , 2016 (30)	Experimental	Rat	Basic and applied science	Cytokine release after laparoscopy	+
Guba PM <i>et al.</i> , 2016 (31)	Experimental	Rat	Technological testing	Material development	+
Wu D <i>et al.</i> , 2020 (32)	Experimental	Rat	Basic science	Imaging development	+
Enciso S <i>et al.</i> , 2016 (33)	Experimental	Pig	Skills training	Assessment of laparoscopic skills	+
Choi M <i>et al.</i> , 2015 (36)	Experimental	Pig	Applied science	Gene sequencing/genetic studies	+
Yeom SC <i>et al.</i> , 2012 (39)	Experimental	Pig	Applied science	Biochemistry	+
Sieren JC <i>et al.</i> , 2014 (41)	Experimental	Pig	Basic and applied science	Genetic studies combined with imaging procedure development	+
Erridge S <i>et al.</i> , 2019 (42)	Theoretical (method development)	Pig	Technological testing	Material development	+
Roberts KE <i>et al.</i> , 2019 (43)	Theoretical (method development)	Pig	Technological testing	Material development	+
Watanabe R <i>et al.</i> , 2020 (44)	Theoretical (method development)	Pig	Technological testing	Operation and imaging method testing	+
Luo H <i>et al.</i> , 2020 (45)	Theoretical (method development)	Pig	Technological testing	Imaging and navigation in laparoscopic surgery	+
Wolthuis AM <i>et al.</i> , 2016 (46)	Theoretical (method development)	Pig	Technological testing	Laparoscopic vagal nerve stimulation to prevent from postoperative ileus	+
Passerotti CC <i>et al.</i> , 2009 (47)	Theoretical (method assessment)	Pig	Technological testing	Comparison of suture techniques in different operation types	+
van Mulken TJM <i>et al.</i> , 2018 (48)	Theoretical (method assessment)	Rat	Technological testing	Implementation of robotic microsurgery	+
La Tore M <i>et al.</i> , 2013 (49)	Theoretical (method assessment)	Pig	Skills training	Simulation versus training on animal models	+
Johannesson UE <i>et al.</i> , 2020 (52)	Theoretical (method assessment)	Pig	Skills training	VR simulation versus training on animal models	+
Huber T <i>et al.</i> , 2017 (54)	Theoretical (method assessment)	Pig	Skills training	VR simulation versus training on animal models	+
Raison N <i>et al.</i> , 2020 (57)	Theoretical (method assessment)	Pig, rat	Skills training	VR simulation versus training on animal models	+

VR, virtual reality.

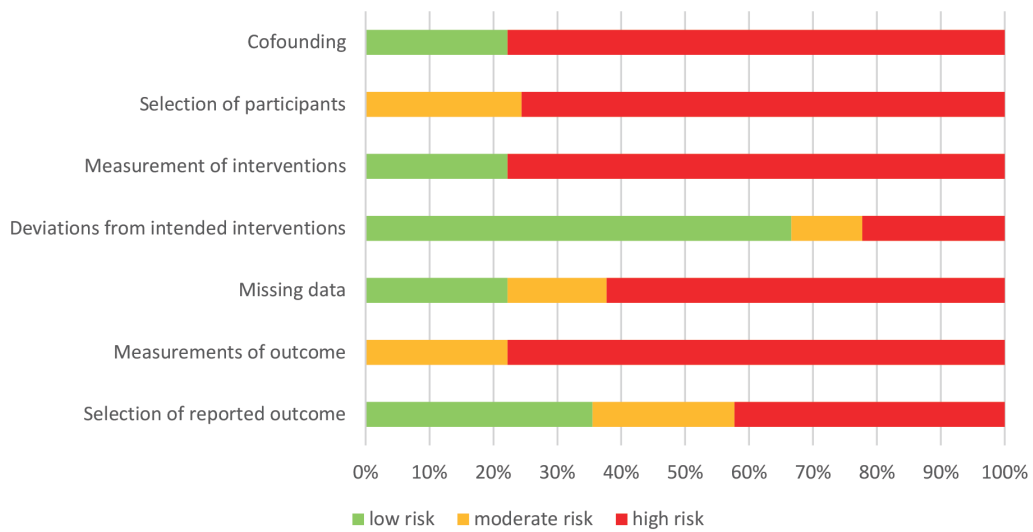


Figure S1 RoBIN-I for non-randomized trials about skills training/technological testing.

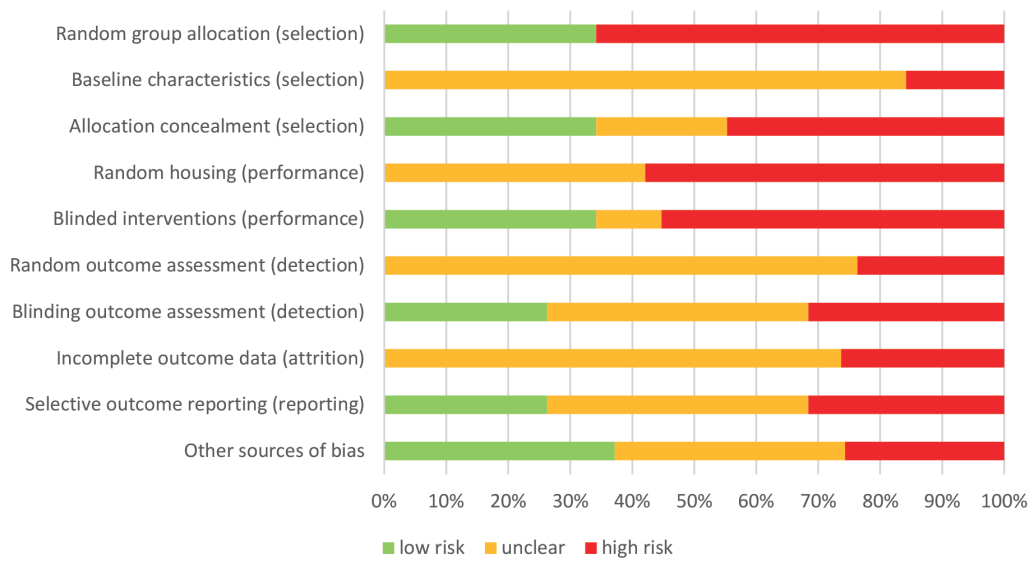


Figure S2 SYRCLE RoB for basic/applied research.