Appendix 1

1# “Fecal Incontinence” OR “Fecal Incontinence” OR “Incontinence, Fecal” OR “Bowel Incontinence” OR “Fecal Soiling” OR “Low anterior resection syndrome” OR “LARS” OR “Faecal incontinence” OR “Sphincter function” OR “Bowel function”

2# “Biofeedback” OR “BF”

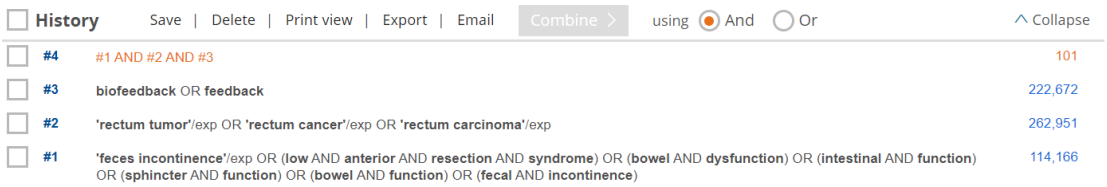
3# “Colorectal Surgery” OR “Proctocolectomy” OR “Anal preservation” OR “Sphincter-sparing” OR “Sphincter-saving" OR “Sphincter sparing” OR “Sphincter saving" OR “Low anterior resection” OR “Anterior resection” OR “Intersphincteric resection” OR “Resection”

Pubmed

((((((((((((Fecal Incontinence[MeSH Terms]) OR (Fecal Incontinence)) OR (Incontinence, Fecal)) OR (Bowel Incontinence)) OR (Incontinence, Bowel)) OR (Fecal Soiling)) OR (Soilings, Fecal)) OR (Low anterior resection syndrome)) OR (Bowel dysfunction)) OR (Bowel function)) OR (Sphincter function)) OR (intestinal dysfunction)) OR (intestinal function)) AND ((biofeedback) OR (feedback))) AND ((((((((((((((((((Rectal Neoplasms[MeSH Terms]) OR (Rectal Neoplasms)) OR (Neoplasm, Rectal)) OR (Rectal Neoplasm)) OR (Rectum Neoplasms)) OR (Neoplasm, Rectum)) OR (Rectum Neoplasm)) OR (Rectal Tumors)) OR (Rectal Tumor)) OR (Tumor, Rectal)) OR (Neoplasms, Rectal)) OR (Cancer of Rectum)) OR (Rectum Cancers)) OR (Rectal Cancer)) OR (Cancer, Rectal)) OR (Rectal Cancers)) OR (Rectum Cancer)) OR (Cancer, Rectum)) OR (Cancer of the Rectum))

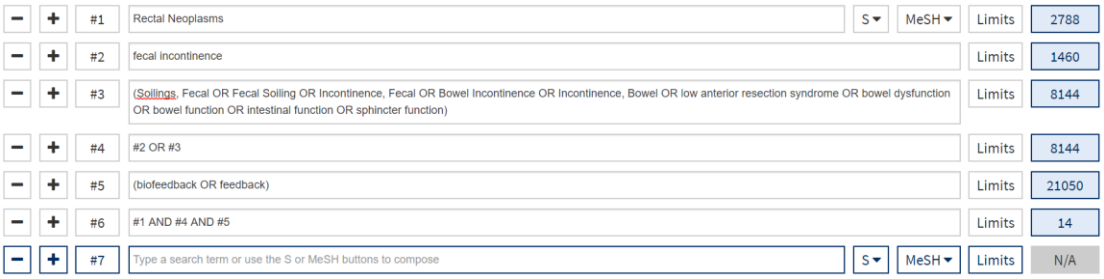
Conducted on 2020-6-18, number of hits: 130

Embase



Conducted on 2020-6-18, number of hits: 101

Cochrane Library



Conducted on 2020-6-18, number of hits: 14

ClinicalTrials.Gov

(rectal neoplasms OR rectal cancer) AND (biofeedback OR feedback)

Conducted on 2020-6-18, number of hits: 17

Appendix 2

Basic information of literature

Review Title _____

Date _____ **Reviewer** _____

Study Title _____

First author	
Year of publication	
Country of publication	
Publication type	Journal/Abstract/Other
Contact details	

Eligibility of included studies

Study type	
Patients with intestinal dysfunction after rectal cancer surgery	yes: no:
Biofeedback therapy	yes: no:
Note：	

Characteristics of participants

Characteristics of participants	Study
Total number of participants Number of groups in the intervention Number of groups in the	

control group		
Participants		**Age：Median____Average____Range___** **Sex：** **Other：**
Intervention measures		***Record the specific contents, methods, operation specifications, participants, time, frequency and cycle of intervention, and whether the participants have received training***
Control measures		***Record the specific contents, methods, operation specifications, participants, time, frequency and cycle of intervention, and whether the participants have received training***
Follow up time		
Outcomes	Diagnostic criteria of disease	Evaluation of prognosis

Methods：Non randomized study quality assessment：(MINORS0)

Methodological items	**Score**
1、 **A clearly stated aim:** the question addressed should be precise and relevant in the light of available literature 2、 **Inclusion of consecutive patients：** all patients potentially fit for inclusion (satisfying the criteria for inclusion) have been included in the study during the study period (no exclusion or details about the reasons for exclusion) 3、 **Prospective collection of data:**data were collected according to a protocol established before the beginning	

of the study 4、 **Endpoints appropriate to the aim of the study:** unambiguous explanation of the criteria used to evaluate the main outcome which should be in accordance with the question addressed by the study. Also, the endpoints should be assessed on an intention-to-treat basis. 5、 **Unbiased assessment of the study endpoint:** blind evaluation of objective endpoints and double-blind evaluation of subjective endpoints. Otherwise the reasons for not blinding should be stated 6、 **Follow-up period appropriate to the aim of the study:** the follow-up should be sufficiently long to allow the assessment of the main endpoint and possible adverse events 7、 **Loss to follow up less than 5%:** all patients should be included in the follow up. Otherwise, the proportion lost to follow up should not exceed the proportion experiencing the major endpoint 8、 **Prospective calculation of the study size:** information of the size of detectable difference of interest with a calculation of 95% confidence interval, according to the expected incidence of the outcome event, and	

	information about the level for statistical significance and estimates of power when comparing the outcomes	
9、	**An adequate control group:** having a gold standard diagnostic test or therapeutic intervention recognized as the optimal intervention according to the available published data	
10、	**Contemporary groups:** control and studied group should be managed during the same time period (no historical comparison)	
11、	**Baseline equivalence of groups:** the groups should be similar regarding the criteria other than the studied endpoints. Absence of confounding factors that could bias the interpretation of the results	
12、	**Adequate statistical analyses:** whether the statistics were in accordance with the type of study with calculation of confidence intervals or relative risk	

Note：0（Not reported）1（Insufficient）2（Sufficient）

Results

	Intervention group	Control group
Number		
Exclusion number		
Number of observations		

Number of lost follow-up		
Number of events		

Continuous variable (Before intervention)	Intervention group			Control group		
Outcomes	N	Mean	Standard deviation (SD)	N	Mean	Standard deviation (SD)
Continuous variable (After intervention)	Intervention group			Control group		
Outcomes	N	Mean	Standard deviation (SD)	N	Mean	Standard deviation (SD)
Continuous	Intervention group			Control group		

variable (Change)						
Outcomes	N	Mean	Standard deviation (SD)	N	Mean	Standard deviation (SD)

Appendix 3

1.Dubovyĭ,V.A. Biofeedback training in the treatment of anterior resection syndrome. Lik Sprava2006;(5-6): 55-60.

2.Fomenko O.Y,Kashnikov V. N,Alekseev M. V, et al. Rehabilitation program for patients with low anterior resection syndrome.Vopr Kurortol Fizioter Lech Fiz Kult.2020;97(5): 52-59.

3.Cohee W,Hurff A,Gazewood D,et al. Benign Anorectal Conditions: Evaluation and Management.Am Fam Physician.2020;101(1): 24-33.

4.Andromanakos N,Skandalakis P,Troupis T,et al.Constipation of anorectal outlet obstruction: pathophysiology, evaluation and management.J Gastroenterol Hepatol 2006;21(4): 638-646.

5.Andromanakos P,Filippou K,Pinis I,et al.Anorectal incontinence: A challenge in diagnostic and therapeutic approach.European Journal of Gastroenterology and

Hepatology 2013;25(11): 1247-1256.

6.Bartlett L,Sloots K,Nowak M,et al.Biofeedback for fecal incontinence: a randomized study comparing exercise regimens.Dis Colon Rectum 2011;54(7): 846-856.

7.Bartlett L,Sloots K,Nowak M,et al.Supplementary home biofeedback improves quality of life in younger patients with fecal incontinence.Journal of Clinical Gastroenterology 2015;49(5): 419-428.

8.Buhr J,Hoffmann W,Allemeyer E,et al.Clinical pathway for fecal incontinence-results in a 7-year follow-up.Colorectal disease 2019;21: 106.

9.Dalsgaard P,Emmertsen J,Juul T et al.Nurse-led personalized conservative treat ment in patients with Low Anterior Resection Syndrome.Colorectal disease 201 9;21: 112.

10.Dalsgaard P,Emmertsen J,Mekhael M,et al.Nurse-led standardized intervention for low anterior resection syndrome. A population-based pilot study.Colorectal Dis 2021;23(2): 434-443.

11.Ho H,Chiang M,Tan M,et al.Biofeedback therapy for excessive stool frequen cy and incontinence following anterior resection or total colectomy.Dis Colon R ectum 1996;39(11): 1289-1292.

12.Jarrett E,Matzel E,Stösser M,et al.Sacral nerve stimulation for faecal incontin ence following a rectosigmoid resection for colorectal cancer.Int J Colorectal Di s 2005;20(5): 446-451.

13.Kang B,T.G.Lee,Muscle regeneration: Research for the treatment of fecal inc ontinence.Journal of the Korean Society of Coloproctology 2010;26(1): 1-7.

14.Rimmer C,Stackhouse K,Cruickshank N,et al.A targeted biofeedback program me improves functional outcome following low anterior resection.Colorectal dise ase.2012;14: 23.

15.Kim K,Jeon G,Song S,et al.Biofeedback Therapy Before Ileostomy Closure i n Patients Undergoing Sphincter-Saving Surgery for Rectal Cancer: A Pilot Stu dy.Ann Coloproctol 2015;31(4): 138-143.

16.Arnaud A,Fretes R,Joly A,et al.Posterior approach to the rectum for treatme nt of selected benign lesions.Int J Colorectal Dis 1991;6(2): 100-102.

17.Stackhouse K,Clarson E,Smith, J,et al.A targeted biofeedback programme im proves functional outcome following low anterior resection.Colorectal disease 20 18;20: 43.