

Supplementary Table 2 summarises the main content (RQ2) of each article according to the PICO principle, which includes Population, Intervention, Comparison and Outcome measures. The earliest reported study meeting the eligibility criteria was done by Holloway et al (2009), therefore the current review considers literature over a 7 year study period from 2009 to 2015. Note-OB is obesity, MOB is Morbidly obese, T2DM is type 2 diabetes mellitus, HT is hypertension, OWHLT is overweight with healthy, LEHLT is lean with healthy, LEOW is lean with slightly overweight, NGT is non-glucose tolerance, OCs is Obese-control

*presented significant difference at p-value <0.05 or under

Reference	Participants (M/F)	Study groups		Intervention					Outcome measure		
		Case	Control	Modality	Intensity	Volume (min/session)	Frequency (times/week)	Duration (week)	Protein description		
Holloway 2009	N = 5 (5/0)	One group		Endurance	6x1 min	30	3	6	Up-regulation (4)		
		Pre-post		(motorised treadmill)	90-100% V _{O2max}				P25705 ATP synthase subunit alpha, mitochondrial	ATPA (ATP5A1 ATP5A, ATP5AL2, ATPM)	
	age 21 ± 2 y								P06576 ATP synthase subunit beta, mitochondrial	ATPB (ATP5B)	
	Vastus lateralis (biopsy)				4 min				P31040 Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial	SDHA	
					50% V _{O2max}				P40939 Trifunctional enzyme subunit alpha, mitochondrial	ECHA (HADHA HADH)	
	1D-SDS-PAGE LC-MS/MS										
Egan 2011	N = 8 (8/0)	One group		Endurance training	80% V _{O2max}	60	everyday	2	Up-regulation (21)		
	Age 23 ± 2 y	Pre-post		(cycling)				(14 d)	P03915 NADH-ubiquinone oxidoreductase chain 5	NU5M (MT-ND5 MTND5, NADH5, ND5)	
	BMI 23.6 ± 0.9 kg.m-2								P51970 NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8	NDUA8 (NDUFAB8)	
									Q9PQJ0 NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13	NDUFA13 (NDUFA13 GRIM19, CDA016, CGI-39)	
	Vastus lateralis (biopsy)								P25705 ATP synthase subunit alpha, mitochondrial	ATPA (ATP5A1 ATP5A, ATP5AL2, ATPM)	
	2DIGE								P00505 Aspartate aminotransferase, mitochondrial	AATM (GOT2)	
	LC-MS/MS								P02144 Myoglobin	MYG (MB)	
									P04075 Fructose-bisphosphate aldolase A	ALDOA (ALDOA ALDA)	
									P04179 Superoxide dismutase [Mn], mitochondrial	SODM (SOD2)	
									P06576 ATP synthase subunit beta, mitochondrial	ATPB (ATP5B)	
									P07954 Fumarate hydratase, mitochondrial	FUMH (FH)	
									P09622 Dihydrolipoyl dehydrogenase, mitochondrial	DLDH (DLD GCSL, LAD, PHE3)	
									P15259 Phosphoglycerate mutase 2	PGAM2 (PGAM2 PGAMM)	
									P17540 Creatine kinase S-type, mitochondrial	KCRS (CKMT2)	
									P29590 Protein PML (Promyelocytic leukemia protein) (RING finger protein 71) (Tripartite motif-containing protein 19)	PML (PML MYL, PP8675, RNF71, TRIM19)	
									P30086 Phosphatidylethanolamine-binding protein 1	PEBP1 (PEBP1 PBP, PEBP)	
									P36957 Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial	ODO2 (DLST)	
									P40926 Malate dehydrogenase, mitochondrial	MDHM (MDH2)	
									P49411 Elongation factor Tu, mitochondria	EFTU (TUFM)	
									P60174 Triosephosphate isomerase	TPIS (TP11, TPI)	
									P61604 10 kDa heat shock protein, mitochondrial	CH10 (HSPE1)	
									Q9UJ7 GTP-AMP phosphotransferase AK3, mitochondrial	KAD3 (AK3)	
									Down-regulation (5)		
									P20674 Cytochrome c oxidase subunit 5A, mitochondrial	COX5A (COX5A)	
									P02511 Alpha-crystallin B chain	CRYAB (CRYAB CRYA2, HSPB5)	
									O14983 Sarcoplasmic/endoplasmic reticulum calcium ATPase 1	AT2A1 (SERCA1)	
									Q96A32 Myosin regulatory light chain 2, skeletal muscle isoform	MLRS (MYLPF)	
									P11762 Galectin-1	LEG1 (LGALS1)	
	Hussey 2013	N = 12 (8/4)	One group		Endurance	60 min	60	3 d/wk	4	Up-regulation (3)	
			Pre-post			55% V _{O2max}				P02765 AHSG cDNA FLJ55606, highly similar to Alpha-2-HS-glycoprotein	FETUA (AHSG, FETUA, PRO2743)
		T2DM								O95169 NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8, mitochondrial	NDU88 (NDUF88)
		(OW/OB)				6x5 min	30	2 d/wk		P12882 Myosin-1	MYH1 (MYH1)
		n = 6 (4/2)				70% V _{O2max}					
									Down-regulation (3)		
age 54 ± 4 y									P02511 Alpha-crystallin B chain	CRYAB (CRYAB)	
									P15121 Aldose reductase	ALDR (AKR1B1 ALDR1)	
BMI 29 ± 2 kg.m ⁻²									Q8N335 Glycerol-3-phosphate dehydrogenase 1-like protein	GPD1L (GPD1L KIAA0089)	
	Vastus lateralis (biopsy)										
	1D-SDS-PAGE LC-MS/MS										
Schild 2015	N = 10	ET & LE	UT & LE/OW/OB	Endurance exercise	na	5h per week		>5 y	Up-regulation (43)		
									O00330 Pyruvate dehydrogenase protein X component, mitochondrial	ODPX (PDHX PDX1)	
	Vastus lateralis (biopsy)		n = 5						O43181 NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial	NDUS4 (NDUFS4)	
		n = 5	Age 24 ± 5 y						O75306 NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial	NDUS2 (NDUFS2)	
		Age 27 ± 2 y							O75489 NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial	NDUS3 (NDUFS3)	
									O75746 Calcium-binding mitochondrial carrier protein Aralar1	CMC1 (SLC25A12 ARALAR1)	
									O75947 ATP synthase subunit d, mitochondrial	ATP5H (ATP5H My032)	
									P00403 Cytochrome c oxidase subunit 2	COX2 (MT-CO2 COII, COXII, MTCO2)	
									P03915 NADH-ubiquinone oxidoreductase chain 5	NU5M (MT-ND5 MTND5, NADH5, ND5)	
									P06576 ATP synthase subunit beta, mitochondrial	ATPB (ATP5B)	
									P11177 Pyruvate dehydrogenase E1 component subunit beta, mitochondrial	ODPB (PDHB PHE1B)	
									P12235 ADP/ATP translocase 1	ADT1 (SLC25A4 ANT1)	
									P14854 Cytochrome c oxidase subunit 6B1	COX6B1 (COX6B1 COX6B)	
									P17540 Creatine kinase S-type, mitochondrial	KCRS (CKMT2)	
									P21912 Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial	SDHB (SDHB SDH, SDH1)	
									P24310 Cytochrome c oxidase subunit 7A1, mitochondrial	COX7A1 (COX7A1 COX7AH)	
									P24539 ATP synthase F(0) complex subunit B1, mitochondrial	ATP5F1 (ATP5F1)	
									P28331 NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial	NDUS1 (NDUFS1)	
									P30038 Delta-1-pyrroline-5-carboxylate dehydrogenase, mitochondrial	ALA41 (ALDH4A1 ALDH4, P5CDH)	
									P31040 Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial	SDHA	
		LC-MS/MS	BMI 23.4 ± 1.6 kg.m ⁻²	kg.m ⁻²							

P36542	ATP synthase subunit gamma, mitochondrial (F-ATPase gamma subunit)	ATPG (ATP5C1 ATP5C, ATP5CL1)
P48735	Iso citrate dehydrogenase [NADP], mitochondrial	IDHP (IDH2)
P49748	Very long-chain specific acyl-CoA dehydrogenase, mitochondrial	ACADV (ACADVL)
P49753	Acyl-coenzyme A thioesterase 2, mitochondrial	ACOT2
P54819	Adenylate kinase 2, mitochondrial	KAD2 (AK2)
Q00325	Phosphate carrier protein, mitochondrial	MPCP (SLC25A3 PHC, OK/SW-cl.48)
Q02218	2-oxoglutarate dehydrogenase, mitochondrial	ODO1 (OGDH)
Q02978	Mitochondrial 2-oxoglutarate/malate carrier protein	M2OM (SLC25A11 SLC20A4)
Q16795	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial	NDUA9 (NDUFA9 NDUFSZL)
Q96IX5	Up-regulated during skeletal muscle growth protein 5	USMG5 (USMG5 DAPIIT, HCVFTP2, PD04912)
Q99643	Succinate dehydrogenase cytochrome b560 subunit, mitochondrial	C560 (SDHC CYB560, SDH3)
Q9HCC0	Methylcrotonoyl-CoA carboxylase beta chain, mitochondrial	MCCB (MCCC2)
Q9P2R7	Succinyl-CoA ligase [ADP-forming] subunit beta, mitochondrial	SUCB1 (SUCLA2)
Q9Y2Z9	Ubiquinone biosynthesis monooxygenase COQ6, mitochondrial	COQ6 (COQ6 CGI-10)
Q9Y6C9	Mitochondrial carrier homolog 2	MTCH2 (MTCH2 MMP, HSPC032)
Q9Y8M9	NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9	NDUB9 (NDUFB9 LYRM3, UQORZ2)
P31930	Cytochrome b-c1 complex subunit 1, mitochondrial	QCR1 (UQCRC1)
O75964	ATP synthase subunit g, mitochondrial	ATPSL (ATP5L)
O75390	Citrate synthase, mitochondrial	CISY (CS)
Q99798	Aconitate hydratase, mitochondrial	ACON (ACO2)
P42126	Enoyl-CoA delta isomerase 1, mitochondrial	ECI1 (ECI1 DCI)
Q13011	Delta(3,5)-Delta(2,4)-dienoyl-CoA isomerase, mitochondrial	ECH1
Q53EW7	Branched-chain-amino-acid aminotransferase	Q53EW7 (BCAT2)
O75208	Ubiquinone biosynthesis protein COQ9, mitochondrial	COQ9 (COQ9)
